



ICNR²⁰²⁶

**7th International Conference
on NeuroRehabilitation**

Seoul, South Korea between Sept. 29 – Oct 2, 2026!

KAIST



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ABOUT ICNR2026

The 7th International Conference on NeuroRehabilitation (ICNR2026) will take place from September 29th to October 2nd, 2026, in Seoul, South Korea. The conference brings together leading researchers, clinicians, engineers, and innovators from around the world working across neurorehabilitation, clinical motor control, wearable robotics, neural interfaces and stimulation, artificial intelligence, computational methods, and translational research. With a strong focus on advancing science and technology for neurorehabilitation, ICNR2026 aims to foster the translation of innovative research into meaningful clinical applications and to improve rehabilitation outcomes for individuals living with neurological conditions. The conference provides a unique platform for interdisciplinary exchange, collaboration, and innovation across research, clinical, and industry communities.

The organizers of ICNR2026 emphasize that the content, views, and opinions expressed by speakers, authors, and attendees are their own and do not necessarily reflect the views or positions of the conference chairs, organizing committee, or affiliated institutions. ICNR2026 is committed to fostering an open, rigorous, and respectful scientific environment, where discussion and debate are encouraged in the pursuit of knowledge and understanding. We promote ethical and scientifically rigorous research practices and expect all participants to engage professionally and respectfully, in accordance with the highest standards of scientific integrity, academic freedom, and responsible scientific inquiry.

Please, follow us at: <https://2026.icneurorehab.org/>.

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LETTER FROM THE ICNR2026 CONFERENCE CHAIRS

September 21st, 2026

Dear Colleagues,

It is our great pleasure to welcome you to the 7th International Conference on NeuroRehabilitation (ICNR2026), which will take place in Seoul, South Korea, from September 29 to October 2, 2026.

Following the success of previous editions, ICNR2026 brings together researchers, clinicians, engineers, innovators, and students from around the world to exchange ideas and advance the field of neurorehabilitation. As the field continues to evolve from promising research toward clinically meaningful solutions, this conference provides a unique forum to explore how science, technology, and clinical practice can work together to improve the lives of people living with neurological disorders.

The scientific programme will cover a broad spectrum of emerging developments in neurorehabilitation, including rehabilitation and wearable robotics, artificial intelligence and computational methods for precision rehabilitation, clinical motor control, neural interfaces and stimulation, and clinical translation and industry. Through plenary lectures, oral and poster presentations, special sessions, workshops, and technology demonstrations, ICNR2026 will showcase advances ranging from fundamental mechanisms of recovery to innovative technologies and their translation into clinical practice.

We are particularly excited to welcome the international neurorehabilitation community to Seoul, a city where technological innovation and rich cultural heritage come together. Beyond the scientific programme, we hope that ICNR2026 will provide many opportunities to meet colleagues, establish new collaborations, exchange perspectives across disciplines, and build lasting connections. Our social programme will also offer participants the opportunity to experience some of Seoul's history, culture, and vibrant urban environment.

We would like to express our sincere gratitude to all those who have contributed to making ICNR2026 possible: the organizing and scientific committees, authors, reviewers, speakers, session and workshop organizers, sponsors, exhibitors, and, most importantly, all of you who are joining us in Seoul. Your contributions and enthusiasm are what make this international community so vibrant and forward-looking.

We look forward to welcoming you to Seoul and to sharing four inspiring days of science, innovation, collaboration, and discussion as we work together to shape the future of neurorehabilitation.

We look forward to seeing you at ICNR2026!



Hyung-Soon Park
Conference Chair, ICNR2026
KAIST, South Korea



Ha-Suk Bae
Conference Co-Chair, ICNR2026
Ewha Women's Hospital, South Korea

ICNR2026 - PROGRAM AT A GLANCE

ICNR2026																																	
WS Time	Tuesday, Sept. 29th								Wednesday, Sept. 30th								Thursday, Oct. 1st								Friday, Oct. 2nd								Conf Time
	Room B	Room C	Room D	Room E	Room F	Room G	Room H	Room J	Track A	Room A	Track B	Room B	Track C	Room C	Track D	Room D	Track E	Room E	Track A	Room A	Track B	Room B	Track C	Room C	Track D	Room D	Track E	Room E					
08:00-09:30									RWR01	AICM01	CMC01	NIS01	CTIT01	RWR09	AICM05	CMC06A	NIS06	CTIT03	RWR02B	RWR12	CMC05	NIS09	NIS13	Prof. Ursula Hofstoetter, Plenary Lecture (Room A)								08:30-09:15	
09:30-11:00	WS15	WS02	WS04	WS08	WS13	WS05		WS01	RWR03	AICM02A	CMC02	NIS02	CTIT02	RWR11	AICM06	CMC06B	NIS07	CTIT04	RWR13A	NIS14	NIS05	NIS10	AICM04									09:15-10:45	
11:00-11:30																								Coffee break								10:45-11:15	
11:30-13:00	WS15	WS02	WS04	WS08	WS13	WS05		WS01	RWR03	AICM02A	CMC02	NIS02	CTIT02	RWR11	AICM06	CMC06B	NIS07	CTIT04	RWR13A	NIS14	NIS05	NIS10	AICM04									11:15-12:45	
13:00-14:00	Lunch break								Lunch break 12:45-13:30								Lunch break								Lunch break								12:45-13:45
									Angel Robotics, Spotlight Session (Room A) 13:30-13:45																								
14:00-15:30	WS16	WS02	WS04	WS14	WS12	WS06	WS07	WS10	WS09	RWR04	AICM02B	CMC03	NIS03	RWR06	RWR02A	AICM07	NIS11	NIS08	NIS12	RWR13B	RWR08	RWR05B	Prof. Claudio Castellini, Plenary Lecture (Room A)								13:45-14:30		
15:30-16:00	Coffee break								Coffee break								Coffee break								Closing Session (Room A)								16:00-16:30
16:00-17:30									WS16	WS02	WS04	WS14	WS12	WS06	WS07	WS10	WS09	RWR05A	AICM03	CMC04	NIS04	RWR07	Exhibition & Poster								16:30-18:00		
19:00-21:00	Opening Reception & Welcome Cocktail & Music Festival (Rock Band) (Room K)																								Conference Banquet (Room K)				18:00-19:00				
																													19:30-22:00				

CONFERENCE COMMITTEES

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Ha-Suk Bae, Ewha Women's Hospital (Co-chair)

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Prof. Claudio Castellini, Ph.D.

Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

Moderators

Prof. Won-Seok Kim

Dr. Sangjoon Kim

Title: Interactive Learning: Structuring the User's Central Role in Assistive Robotics

Abstract. Incremental learning, leading to interactive human/machine learning, is key to the development of properly controllable, effective, and acceptable assistive devices. In this talk I will try to outline the benefits of using it, framing it in the more general paradigm of User-Centred Design.

Short Biosketch. Claudio Castellini is a researcher in medical robotics, focussing on rehabilitation and assistive robotics, human-machine interfaces and interaction, and applied machine learning. After obtaining a degree in Biomedical Engineering in 1998 at the University of Genoa, Italy, he obtained a Ph.D. in Artificial Intelligence (Mathematical Logic) at the School of Informatics of the University of Edinburgh, Scotland, in 2005. Soon after, he turned his attention to robotics for the disabled, spending 4.5 years as a post-doctoral fellow at the Advanced Robotics Laboratory of the University of Genoa, Italy. In 2009, he was hired at the German Aerospace Centre where, as of now, he is a senior researcher and joint lab leader at the Institute of Robotics and Mechatronics. In 2021 he has been appointed full professor of medical robotics at the University of Erlangen-Nuremberg where he leads the Assistive Intelligent Robotics (AIROB) Lab and enjoys being the Deputy Dean for Public Relations and Communication of the Faculty of Engineering. As of now, he has co-authored about 160 scientific papers, he is involved in a few research projects at the Bavarian, German, and European levels, and serves as Associate Editor for the IEEE Transactions on Neural Systems and Rehabilitation Engineering, as a board member for the International Consortium for Rehabilitation Robotics (ICORR), as the organiser of the ICORR YouTube Channel and as an Editor / Associate Editor for BioRob, ICNR, and the RehabWeek.



Prof. B.J. Fregly, PhD

Departments of Mechanical Engineering and Bioengineering,
Rice University,
Houston, TX, USA

Moderators

Prof. Jose L. Pons
Dr. Jesus Tornero

Title. Computational Design of Personalized Treatments for Movement Impairments: From Vision to Reality

Abstract. This plenary lecture will cover the history of how the Neuromusculoskeletal Modeling (NMSM) Pipeline – software that makes it possible to use personalized neuromusculoskeletal computer models to design clinical treatments for movement impairments – went from being a research vision to a practical reality over a 25-year time period. The lecture will provide background on how computer-aided engineering software capabilities germinated the vision, new technical developments required to fulfill the vision, early research efforts to initiate the vision, subsequent research efforts to pursue the vision, and finally recent software development efforts to fulfill the vision. The final result is the NMSM Pipeline software, which turns the entire neuromusculoskeletal Model Personalization and Treatment Optimization process into a codified series of steps within commercial-grade software. Built in the MATLAB programming environment on top of Stanford’s OpenSim musculoskeletal modeling software, the NMSM Pipeline requires no coding to use and fills an important gap in getting neuromusculoskeletal modeling research across the “valley of death” from interesting research to clinical applicability. Examples of personalized computational treatment design to improve walking function will be presented for gait modification to treat knee osteoarthritis, high tibial osteotomy surgery to treat knee osteoarthritis, neural control prediction to simulate faster speed walking post-stroke, and extensive orthopedic surgery to treat pelvic cancer.

Short Biosketch. B.J. Fregly received his Bachelor’s degree from Princeton University (1986) and his Masters and Ph.D. degrees from Stanford University (1987 and 1993) in Mechanical Engineering. Following a year of post-doctoral research at the University of Lyon in France (1993-1994), Dr. Fregly worked as a software developer in Silicon Valley for Rasna/Parametric Technology Corporation (1995-1999). From 1999 to 2017, he served on the faculty of the Department of Mechanical & Aerospace Engineering at the University of Florida, where he was a Knox T. Millsaps Professor, a University of Florida Research Foundation Professor, and the recipient of department and college Teacher of the Year awards. In August of 2017, Dr. Fregly joined the Department of Mechanical

Engineering at Rice University as a Professor and CPRIT Scholar in Cancer Research. His research focuses on modeling, simulation, and optimization of the human neuromusculoskeletal system with the goal of designing highly effective personalized treatments for movement impairments. To date, the three primary clinical application areas have been stroke, osteoarthritis, and pelvic cancer. Dr. Fregly has been the PI on over \$13 million in research funding primarily from the National Science Foundation (including a CAREER Award), the National Institutes of Health, and the Cancer Prevention and Research Institute of Texas. Most recently, Dr. Fregly has directed the development of the Neuromusculoskeletal Modeling Pipeline (<https://nmsm.rice.edu>), which is Matlab-based software that adds model personalization and treatment optimization functionality to OpenSim. At Rice, Dr. Fregly has also served as a magister overseeing Brown College, a residential housing community of approximately 400 undergraduate students.



Prof. Ursula Hofstoetter, PhD

Center for Medical Physics and Biomedical Engineering,
Medical University of Vienna,
Vienna, Austria

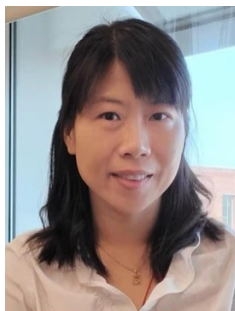
Moderators

Prof. Denny Oetomo
Prof. Junho Choi

Title. Harnessing Spinal Motor Capacity: A New Era in Neurorehabilitation

Abstract. The spinal cord possesses remarkable intrinsic capacity to generate and modulate locomotor activity. From the discovery and characterization of spinal central pattern generators in experimental animals to emerging evidence of their functional relevance in humans, research has progressively reshaped our understanding of the spinal cord as more than a passive conduit for supraspinal commands. This talk will explore how this latent motor capacity can be harnessed after spinal cord injury. In particular, it will discuss epidural electrical stimulation and transcutaneous spinal cord stimulation as approaches to engage spinal locomotor networks, enhance residual motor function, and support neurorehabilitation. Together, these advances open new avenues for translating fundamental insights into spinal motor control into meaningful therapeutic strategies for people with spinal cord injury.

Short Biosketch. Ursula Hofstoetter is a neuroscientist and biomedical engineer specializing in human spinal cord physiology, motor control, and neuromodulation, with a particular focus on rehabilitation after spinal cord injury. She co-heads the Human Motor Control and Neuromodulation research group at the Medical University of Vienna, where her work bridges fundamental neuroscience, clinical research, and the conception of accessible neurorehabilitation regimens. Ursula Hofstoetter obtained her Ph.D. in Technical Mathematics from the Vienna University of Technology and has since focused on elucidating the functional organization of human spinal locomotor circuits and their modulation through invasive and non-invasive stimulation techniques. Her research aims to develop and translate innovative neuromodulation strategies to improve motor function and reduce spasticity in individuals with spinal cord injury and other neurological disorders. She has led and contributed to numerous national and international research projects, supervised students across disciplines, and maintains an established track record of high-impact publications. Her work has received international recognition, including the DSQ Research Award for outstanding contributions to spinal cord movement control and rehabilitation.



He (Helen) Huang, Ph.D.

Jackson Family Distinguished Professor,
Lampe Joint Department of Biomedical Engineering,
North Carolina State University and the University of North
Carolina at Chapel Hill

Moderators

Prof. Jiyeon Kang

Prof. Bong-Keun Jung

Title. Embodiment from Both Sides: Towards Human-Prosthesis Symbiosis

Abstract. As the population with limb loss in the U.S. grows to millions, there is an urgent need for new prosthetic technologies that can provide this large population with the best restoration of normal function possible. Advanced robotic prostheses, such as motorized prosthetic legs, have become commercially available. However, the function and acceptance of these robotic devices are still limited.

In this talk, I will introduce my lab's recent research toward building a symbiotic relationship between humans and robotic prosthetic legs. In our previous work, we successfully embodied AI into robotic prosthesis control to personalize walking assistance for individual users. However, this technology has been limited to restoring gait patterns in robotic devices without addressing the user's physical and cognitive function in clinical settings. We aim to resolve these challenges by investigating clinician-AI teaming, reformulating a human-prosthesis hybrid reward function for embodied AI, and quantifying prosthesis embodiment during human-prosthesis co-adaptation. Our innovation will further advance the function of modern, intelligent prostheses and improve the quality of life of individuals with limb amputations.

Short Biosketch. Dr. Helen Huang is the Jackson Family Distinguished Professor in the Joint Department of Biomedical Engineering at North Carolina State University (NC State) and the University of North Carolina at Chapel Hill (UNC) and the Director of the Closed-Loop Engineering for Advanced Rehabilitation (CLEAR) core. Her research interests lie in neural-machine interfaces, wearable robotics (robotic prosthetics and exoskeletons), learning-based wearable robot control, wearer-robot interaction and co-adaptation, and human motor control/biomechanics. She was a recipient of the Delsys Prize for Innovation in Electromyography, NIDILRR Switzer Fellowship, NSF CAREER Award, ASA Statistics in Physical Engineering Sciences Award, and NC State ALCOA Foundation Distinguished Engineering Research Award. She is a Fellow of AIMBE, a Fellow of IEEE, and a NC State faculty scholar. She is currently the

Editor-in-Chief for the IEEE Transactions on Neural Systems and Rehabilitation Engineering and an Editorial Board Member for IEEE Transactions on Biomedical Engineering.



Byung-Mo Oh, MD, PhD

Professor and Chair, Department of Rehabilitation Medicine,
Seoul National University Hospital and University College of
Medicine,
Seoul, South Korea

Moderators

Prof. Hyung-Soon Park

Prof. Jaewon Beom

Title. Beyond Classification: Predicting Functional Recovery in Neurorehabilitation

Abstract. Quantitative assessment of swallowing provides a framework for investigating the relationships between movement physiology, functional impairment, and recovery following neurological injury. Videofluoroscopic swallowing studies (VFSS) enable the characterization of complex spatiotemporal interactions among oropharyngeal structures and bolus transit. Clinical translation of these measurements requires validation appropriate to their intended use, including evidence of measurement reliability, discriminative performance, and prognostic relevance.

This lecture synthesizes findings from four studies examining complementary aspects of quantitative swallowing assessment. The development and verification of the Spatio-Temporal Analyzer for Motion and Physiologic Study (STAMPS) established a methodological basis for reproducible kinematic analysis. The other studies examined support vector machine classification of healthy and dysphagic swallowing using hyoid movement features, kinematic characteristics associated with poor recovery in post-stroke dysphagia, and a Bayesian network model incorporating clinical and neuroimaging variables to predict six-month swallowing outcomes after ischemic stroke.

These investigations illustrate the distinct evidentiary requirements for measurement, classification, and prognostication. Particular consideration is given to physiological interpretability, cohort characteristics, temporal definitions of recovery, and limitations in generalizability. Prognostic associations require further investigation before informing treatment selection, and the clinical utility of prediction models must be established by evaluating their effects on decision-making and patient outcomes. The lecture also introduces an ongoing VFSS foundation model study designed to investigate whether shared video representations can support multiple functional assessments.

Using swallowing as a clinical model, this lecture identifies methodological and translational considerations applicable to quantitative assessment and recovery prediction across neurorehabilitation.

Short Biosketch. Byung-Mo Oh, MD, PhD is a Clinical Professor and Chair of the Department of Rehabilitation Medicine at Seoul National University Hospital and Seoul National University College of Medicine in Seoul, Republic of Korea. He is a board-certified physiatrist with extensive clinical and research expertise in neurorehabilitation, with particular emphasis on traumatic brain injury, concussion, and dysphagia. His research interests span blood-based biomarkers for TBI prognostication, swallowing biomechanics, and technology-assisted rehabilitation, including robotics and artificial intelligence–driven diagnostic and therapeutic tools. Dr. Oh has also conducted multiple studies on brain–computer interface–based rehabilitation systems for individuals with severe physical disabilities. He currently serves as Editor-in-Chief of *Annals of Rehabilitation Medicine* and as Associate Editor of several international journals, including *Dysphagia* and *PM&R*. Through national and industry-funded research projects and active international collaboration, he continues to contribute to the advancement of global neurorehabilitation research and education.



Aaron Young, Ph.D.

George W. Woodruff School of Mechanical Engineering,
Georgia Institute of Technology,
Atlanta, GA, USA

Moderators

Prof. Hyung-Soon Park
Prof. Song Joo Lee

Title. A Unifying Approach for Task Agnostic Control of Wearable Robotics in Neurologically Impaired Populations

Abstract. New end-to-end task agnostic AI systems have transformed the ability of wearable robotics to provide meaningful assistance to users across a diverse range of daily activities as well as user populations. Traditional control methods have often relied on activity classification, state machine, heuristic tuning variables and procedures which are challenging to scale to real-world human movement. This talk will present a unifying approach to task agnostic wearable robotic control through real time deep learning of human biomechanical states that removes the need for manual tuning of controllers or explicit knowledge of the task the user is performing. Outcome measures from related human subject experiments with test scenarios of these systems will be presented focused on both industrial and recreational tasking in able bodied adults using light-weight, clothing integrated, multi-joint exoskeletons. Furthermore, techniques for successful clinical translation of these systems to individuals with neurological gait impairment will be discussed. Relevant human outcomes from a recent clinical trial performed in individuals with stroke using end-to-end task agnostic control across numerous tasks will be presented.

Short Biosketch. Aaron Young is an Associate Professor and Woodruff Faculty Fellow in the Woodruff School of Mechanical Engineering at Georgia Tech and has directed the Exoskeleton and Prosthetic Intelligent Controls (EPIC) lab since 2016. Dr. Young received his MS and PhD degrees in Biomedical Engineering with a focus on neural and rehabilitation engineering from Northwestern University in 2011 and 2014 respectively. He received a BS degree in Biomedical Engineering from Purdue University in 2009. He also completed a post-doctoral fellowship at the University of Michigan in the Human Neuromechanics Lab working with lower limb exoskeletons and powered orthoses to augment human

performance. His research area is in advanced control systems for robotic prosthetic and exoskeleton systems for humans with movement impairment. He combines machine learning, robotics, human biomechanics, and control systems to design wearable robots to improve the community mobility of individuals with walking disability. He has received an NIH New Innovator Award (DP2), NIH NCMRR New Investigator award and IEEE New Faces of Engineering award, and his EPIC lab group won the International VIP Consortium Innovation Competition. He is a Senior Member of the IEEE and serves as an Editor / Associate Editor for BioRob and Rehab Week/ICORR.

[illegible]

WS01. Collaborative Digital Innovation in Neurorehabilitation: From Clinical Data to Real-World Application

*José López Sánchez, Centro Europeo de Neurociencias (CEN), Spain
Dr. Liliana Paredes, ETH Zurich, Switzerland*

Abstract. This workshop will bring together international experts and initiatives to showcase how clinical practice, research, and education can be synergistically integrated through digital tools for neurorehabilitation. The focus is on leveraging real-world data, interdisciplinary collaboration, and patient-centred approaches to advance evidence-based neurotechnology.

Presentations will span complementary perspectives:

- Digital Twins for Stroke Rehabilitation (Dr. Liliana Paredes): creating a scalable database and predictive models for personalized gait recovery after stroke
- The MiNT Academy & CREATe (Alison Watt): establishing an international clinical research and education alliance to harmonize training, research, and guidelines in neurotechnology
- Tech2people (Dennis Veit): co-developing digital rehab tools with continuous clinician feedback, emphasizing interoperability, usability, and standardized outcomes
- Centro Europeo de Neurociencias (Dr. José López Sánchez): integrating digital platforms into daily clinical, research, and educational workflows—covering patient data collection, adaptive treatment plans, real-world studies, and the creation of tailored educational resources.

The workshop will close with a panel discussion to identify barriers, opportunities, and future directions for global neurorehabilitation networks.

Topics of interest

1. Digital twins and predictive modelling in neurorehabilitation
2. Clinical neurotechnology integration (BCI, robotics, exoskeletons, NIBS)
3. Real-world data collection and clinical research platforms
4. International multi-site collaboration and guideline development
5. Co-development methodologies between clinicians, engineers, and industry
6. Clinical education and knowledge transfer in neurorehabilitation

WS02. Neuromusculoskeletal Modeling Pipeline Training Workshop

Prof. B.J. Fregly, Rice University, USA

Abstract. This hands-on workshop will introduce ICNR attendees to the Neuromusculoskeletal Modeling (NMSM) Pipeline (<https://nmsm.rice.edu>), which is open-source Matlab-based software that adds Model Personalization and Treatment Optimization toolsets to the OpenSim musculoskeletal modeling software. In the morning session, attendees will complete hands-on tutorials to learn how to use the NMSM Pipeline's Model Personalization and Treatment Optimization toolsets. Starting with a scaled generic OpenSim model and experimental motion capture, ground reaction, and EMG data, attendees will use the Model Personalization toolset to personalize 1) joint functional axes, 2) muscle-tendon model properties, 3) neural control model properties using muscle synergies, and 4) foot-ground contact model properties. Next, starting with this personalized model and the same experimental data, attendees will use the Treatment Optimization toolset to perform 1) a Tracking Optimization that closely reproduces all available experimental data using joint torque or muscle synergy controls, 2) a Verification Optimization that verifies the controls found by Tracking Optimization can reproduce the experimental data without tracking it, and finally 3) a Design Optimization that performs predictive simulations to design a clinical intervention. In the afternoon session, attendees will choose between two hands-on clinical treatment design projects, using the relevant NMSM Pipeline tools to complete the selected project. The first project will design a high tibial osteotomy surgery for an individual with bilateral medial knee osteoarthritis, with the goal of reducing the peak adduction moment in both knees to a desired value. The second project will design a synergy-based functional electrical stimulation prescription for the paretic leg of a subject post-stroke, with the goal of equalizing propulsive and braking impulse between the two legs while also increasing walking speed to a desired value.

Topics of interest

1. Neuromusculoskeletal modeling
2. Model personalization
3. Computational treatment design
4. Predictive walking simulation
5. Stroke neurorehabilitation

WS03. AI-Driven FES for Personalized Neurorehabilitation: From Clinical Evidence to Hands-On Experience with the NeuroSkin® System

A. Metani, Kurage, France

Abstract. Functional Electrical Stimulation is a powerful tool to restore motor function and promote neuroplasticity in individuals with neurological impairments. Recent advances in wearable technologies, artificial intelligence, and connected health platforms now make it possible to deliver FES in a more personalized, adaptive, and data-driven way. This half-day workshop aims to provide clinicians, therapists, and researchers with a comprehensive introduction to multichannel FES and its integration into modern neurorehabilitation practice through the NeuroSkin® system.

Developed by Kurage, NeuroSkin® is an AI-powered FES garment designed as a pair of trousers embedding dry textile electrodes and motion sensors. It enables real-time synchronized stimulation to key lower-limb muscle groups, supporting walking training in stroke, multiple sclerosis, spinal injury and other neuro-motor disorders. Combined with a clinical gait analysis platform, the system allows for remote monitoring, objective gait quantification, and adaptive stimulation parameter optimization.

The workshop will begin with a theoretical overview of multichannel FES principles, emphasizing motor control, neurophysiological mechanisms, and personalization strategies. A live demonstration will follow, during which volunteers will wear and test the NeuroSkin® device, experiencing its ability to detect movement intention and deliver intelligent stimulation patterns. The final session will present clinical results from daily rehabilitation practice, including case studies and outcomes from ongoing trials across multiple centers, highlighting improvements in gait speed, endurance, and patient engagement.

Participants will gain hands-on understanding of how AI-driven multichannel FES can be integrated into routine therapy to enhance recovery, motivation, and continuity of care. The session will foster open discussion on practical implementation, data-driven rehabilitation, and the future of connected.

Topics of interest

1. Multichannel Functional Electrical Stimulation Therapies (MFEST)
2. MFEST in daily clinical practice
3. Embedded Clinical Gait Analysis
4. Artificial Intelligence

WS04. Strategies for Reliable Assessment in Neurorehabilitation: Bridging Motor, Cognitive, and Technological Domains

Marianna Semprini, IIT, Italy

Jorge Gomez Garcia, CSIC, Spain

Diego Torricelli, CSIC, Spain

Abstract. The design of robust and scalable assessment protocols remains one of the greatest challenges in neurorehabilitation research and clinical translation. Reliable monitoring of motor and cognitive recovery requires the definition of clear strategies concerning which biomarkers, which tasks, which equipment, and which data formats should be adopted to ensure comparability and reproducibility across studies and clinical contexts.

This workshop will address these methodological and translational questions through a multidisciplinary lens. Discussion will focus on identifying meaningful biomarkers for both upper- and lower-limb rehabilitation; defining standardized tasks that capture functional recovery; and assessing equipment usability from both clinician and end-user perspectives. A specific emphasis will be placed on data harmonization and the need for common, open, and standardized formats to foster data sharing and large-scale analysis. Key factors influencing the design of assessment pipelines will also be explored, including the integration of cognitive and motor evaluations, the transition from lab-based to out-of-lab monitoring, and the adaptation of technologies to low- and middle-income settings, where device cost, clinician training, and user education play a critical role. Furthermore, the workshop will consider the implications of legal and ethical compliance and the expanding role of artificial intelligence in extracting clinically relevant information from multimodal datasets. Through talks, group discussions, and case-based sessions, participants will collaboratively identify research and implementation priorities for next-generation neurorehabilitation assessment.

The overall goal is to outline a roadmap toward continuous, AI-assisted, and standardized evaluation frameworks that can support clinical decision-making, enable global accessibility, and ultimately promote a more personalized and equitable rehabilitation practice.

Topics of interest

1. Motor and cognitive assessment in neurorehabilitation
2. Lab vs out-of-the-lab assessment
3. High vs low-middle income countries
4. Legal compliance
5. Artificial Intelligence

WS05. The MetaBotic paradigm: unravelling the links between Mental Workload, Metabolism, and Biomechanics for enhanced lower limb wearable devices

Andrea Berettoni, IIT, Italy

Samuele De Giuseppe, IIT, Italy

Giulia Mariani, IIT, Italy

Abstract. Motor tasks—from simple movements like walking to complex daily activities—differ significantly between healthy individuals and users of lower limb assistive devices. Prosthesis and exoskeleton users often develop novel movement patterns to maintain functionality and safety, which can lead to compensatory strategies and, over time, neuro-musculoskeletal strain. Device characteristics critically influence gait and posture: constraints on natural joint motion may require conscious movement adjustments, increasing both physical effort and cognitive demand. While research has traditionally emphasized biomechanics, physical fatigue, typically assessed through metabolic cost, remains underexplored. Fatigue strongly affects daily performance, and measures such as heart rate and oxygen consumption offer valuable insights for optimizing device design and control strategies. Moreover, physical exertion and mental workload are closely linked: when sensory feedback or intuitive control is limited, users must rely on increased attention and cognitive effort. This can reduce walking speed, alter loading patterns, and raise energy consumption.

This workshop will examine the interplay between biomechanics, metabolic cost, and mental workload in lower limb prosthesis and exoskeleton use. Each topic will be introduced by the organizers, followed by invited talks presenting current research and perspectives. A final panel discussion will engage speakers and participants in exploring methodological challenges, research gaps, and opportunities for innovation. By fostering multidisciplinary dialogue that integrates physiological, cognitive, and mechanical aspects, the workshop aims to advance evaluation methods and guide the design of next-generation assistive technologies that enhance mobility, efficiency, and user comfort.

Topics of interest

1. Lower Limb Prostheses
2. Exoskeletons
3. Human-Device Interaction
4. Biomechanics
5. Metabolic Cost
6. Mental Workload
7. User-centered design

WS06. Precise Biorobotic Rehabilitation: Targeting Tissue Adaptation via Multiscale Computational Models

Claudio Pizzolato, Australia

David Lloyd, Australia

Abstract. Rehabilitation technologies are rapidly evolving from devices that simply assist movement toward systems that actively shape biological recovery. A critical frontier is the ability to steering mechanobiological adaptation of tissues, such as bones, tendons, muscles, and neural pathways, through precisely controlled interventions. This workshop will explore how multiscale computational models of the neuromusculoskeletal system can be leveraged to design and deliver rehabilitation strategies aimed at recovery of function while also driving desirable adaptation of tissue.

Multiscale models provide a unique bridge between levels of biological organization: from cellular mechanotransduction and muscle fibre recruitment, to joint loading, whole body kinematics, and neural control. By embedding these models into biorobotic platforms comprising of exoskeletons, electrical stimulation systems, and wearable robotics, we can move beyond generic therapy protocols toward personalised interventions that optimise loading conditions for each individual. This approach has the potential to accelerate recovery, reduce secondary complications such as osteoporosis or tendon degeneration, and provide quantifiable metrics for clinical decision making.

The workshop will feature a series of short presentations covering:

- Emerging evidence from in-vitro bioreactor studies on tissue adaptation following mechanical response
- Advances in multiscale modelling of isolated tissues and neuromusculoskeletal dynamics
- Integration of multiscale computational models with biorobotic rehabilitation.

To conclude, a panel discussion will focus on debating the translational challenges: model validation, regulatory pathways, and clinical adoption. Participants will be invited to contribute perspectives on how to balance model complexity with usability, and how to design collaborative frameworks that ensure these technologies deliver meaningful outcomes for patients.

Topics of interest

1. Mechanobiology
2. Biorobotic
3. Computational biology
4. Rehabilitation

WS07. Towards a Multi-Center Data-Driven Evaluation System for Parkinson's Disease: From Sensing to Clinical Application

Diego Torricelli, CSIC, Spain

Qi An, The University of Tokyo, Japan

Shingo Shimoda, Nagoya University, Japan

Abstract. Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by heterogeneous motor and non-motor symptoms. Because the disease evolves over time, timely and individualized interventions are crucial to maintaining patients' quality of life. However, current clinical assessments typically require patients to visit hospitals for physician-led evaluations, which are performed infrequently and may not capture symptom fluctuations or treatment effects in daily life.

Recent advances in wearable sensing, digital biomarkers, and AI-based analysis have enabled continuous and objective monitoring of PD. Yet, most existing studies are conducted in isolated, singlesite environments, limiting the generalizability and clinical translation of developed models. Multi-site, international data collection is essential to capture the diversity of patient populations, healthcare systems, and measurement conditions—thereby ensuring robustness, fairness, and scalability of evaluation systems.

This workshop will bring together researchers, clinicians, and engineers to discuss the opportunities and challenges of building such a global framework for PD assessment. The session will focus on strategies for harmonizing multi-center data, validating AI models across populations, and establishing standardized, interoperable systems for neurorehabilitation and disease management.

Topics of interest

1. Parkinson's disease assessment
2. Multi-center data collection
3. AI and machine learning for clinical evaluation
4. Digital biomarkers and digital mobility outcomes (DMO)

WS08. Maximizing Neuroplasticity in Neurorehabilitation through Multimodal and Restorative BCI Approaches

Hyung-Soon Park, KAIST, South Korea

Abstract. Recent advances in neurorehabilitation emphasize promoting neuroplasticity—the brain’s capacity to reorganize and form new connections—as a foundation for recovery after stroke and neurological injury. This workshop will introduce a multimodal, restorative Brain–Computer Interface (BCI) framework that integrates EEG-based intention decoding, adaptive electrical stimulation, soft robotics, and immersive VR/AR feedback to facilitate neuroplastic changes.

Rather than focusing solely on assistive control, the restorative BCI paradigm aims to reactivate impaired motor networks and reinforce functional reorganization through synchronized neural and sensory feedback. Presentations will cover key technological and clinical components: (1) development of soft wearable robots for synchronized neurofeedback and proprioceptive stimulation, (2) application of VR/AR-based motor imagery and multimodal sensory environments to enhance cortical engagement, (3) EEG-based decoding of motor intention, fatigue, and attention for adaptive feedback, and (4) clinical integration and neurophysiological validation in stroke rehabilitation settings.

By combining expertise in engineering, neuroscience, and clinical neurorehabilitation, this session will discuss translational pathways from bench to bedside and explore how multimodal closed-loop systems can maximize neuroplasticity to restore motor function and patient engagement.

Topics of interest

1. Brain–Computer Interface (BCI)
2. Neuroplasticity and neural reorganization
3. EEG-based motor intention decoding
4. Restorative vs. assistive BCI paradigms
5. Soft robotics and haptic feedback
6. Virtual and augmented reality rehabilitation
7. Multimodal stimulation and closed-loop feedback
8. Clinical translation and neurorehabilitation outcomes

WS09. Intention-driven Gait Rehabilitation: Theories and Practical Evidences in Angel Robotics

Kyoungchul Kong, CTO, Angel Robotics Co., Ltd., Seoul, Korea

Dong-wook Rha, CMO, Angel robotics Co., Ltd., Seoul, Korea / Professor, Dept. of rehabilitation medicine, Severance rehabilitation hospital, Yonsei university college of medicine, Seoul, Korea

Daekyum Kim, School of mechanical engineering, Korea university, Seoul, Korea

Won Hyuk Chang, Dept. of physical and rehabilitation medicine, Samsung medical center, Sungkyunkwan university school of medicine, Seoul, Korea

Jayoung Choi, Associate professor, Dept. of rehabilitation medicine, Chungnam national university hospital, Daejeon, Korea

Abstract. This workshop offers an in-depth presentation on the pioneering technology developed by Angel Robotics Co., Ltd. in their wearable gait assist exoskeletons and the resulting clinical efficacy in rehabilitation. Angel Robotics is a leader in the rehabilitation robotics field, featuring innovative products like the Angel Legs M20 (full body, hip and knee joint actuation) and the Angel Suit H10 (hip joint actuation). The topics will be covered in this workshop include (but are not limited to):

- **Gait Intention Recognition and Force Control:** Utilizing built-in high-precision sensors and AI-based algorithms, the system accurately recognizes the user's gait intention in real-time and provides only the necessary torque assistance to compensate for muscle weakness. This approach promotes active participation from the user, maximizing rehabilitation outcomes.
- **Transparent Actuation System:** Through proprietary technology, the robot enables precise torque control with near-zero mechanical resistance, ensuring the device does not impede the user's natural movement.
- **Modularization and Lightweight Design:** The product line includes various models (Angel MEDI, Angel SUIT) tailored for rehabilitation and daily living assistance. The lightweight structure and easy donning/doffing system enhance user-friendliness for both clinicians and patients.
- **Enhanced Gait Rehabilitation:** The system facilitates more than 5 times the repetitive gait training within limited therapy time compared to conventional rehabilitation, showing significant clinical improvements in gross motor function, balance control, and gait function for stroke patients and children with cerebral palsy.
- **Comprehensive Data Acquisition and AI modeling:** Embedded sensors (e.g., joint angle, torque, force sensors, IMUs) capture vast amounts of high-fidelity data on user kinetics and kinematics during walking. This includes metrics like joint range of motion, ground reaction forces, torque provided by the robot, and real-time user intention signals. This robust dataset is used to train proprietary Machine Learning (ML) and Deep Learning (DL) models directly applied to create highly personalized and adaptive rehabilitation and healthcare solutions.

WS10. Quantifying Neuromechanics with Robotic Technologies

Dr. Junho Choi, KIST, South Korea

Prof. Sang Hoon Kang, UNIST, South Korea

Dr. Song Joo Lee, KIST, South Korea

Abstract. This workshop explores how sensory feedback and robotic technologies can quantify and enhance neuromechanical control in movement. Talks will highlight how cutaneous and proprioceptive modulation reshape motor strategies during walking and rehabilitation. Low-impedance robotic devices and EEG-guided platforms for proprioceptive recovery will be presented with clinical evidence. Novel metrics for motor adaptation will be introduced. Together, these studies bridge neuroscience, robotics, and rehabilitation toward closed-loop, personalized neurorehabilitation.

- Cutaneous Modulation Changes Motor Strategy in Treadmill Walking with or without Prosthesis, Prof. Hanguae Park
- Robotic Device with Minimal Impedance for Gravity Support, Dr. Junho Choi
- Robot-Assisted Evaluation and Recovery of Proprioception in Stroke Survivors With EEG-Guided Validation, Prof. Keonyoung Oh
- How Linear Is The Multi-Joint Upper Limb Under Small-Magnitude Perturbations?, Dr. Seongil Hwang
- Kinematic Changes During Rehabilitation in Individuals with Stroke, Dr. Junho Shin
- Kinematic Adaptation During Motor Learning in Robot-Assisted Planar Upper-Limb Reaching Tasks, Prof. Jong Hyun Kim
- Quantifying and Improving Neuromuscular Control in The Pivoting Direction: Dissociation between Muscle Mass and Pivoting Neuromuscular Control in Older Adults, Dr. Kyung-Mi Park

Topics of interest

1. Sensorimotor Integration and Neuromechanical Adaptation
2. Robotic Systems with Minimal Impedance for Natural Movement Support
3. EEG-Guided Rehabilitation and Neurofeedback-Based Motor Recovery
4. Robotic-Assisted Assessment and Recovery of Proprioception
5. Neuromechanics in Pivoting Directions
6. Quantitative Evaluation of Motor Learning during Rehabilitation
7. Integrative Robotic Platforms for Sensory-Motor Training and Evaluation

WS12. Cross-Level Neural Stimulation Framework for Motor Recovery in Parkinson Disease

Jiyeon Kang, GIST, South Korea

Abstract. Parkinson's disease (PD) involves progressive disconnection and maladaptive synchronization within motor neural pathways, leading to severe impairment in voluntary movement. To address this fundamental circuit dysfunction, this workshop introduces an electronic platform for rewiring neural circuits that integrates targeted electrical stimulation, motor behavior engagement, and AI-based signal analysis to restore effective communication across cortical and subcortical structures. Rather than focusing solely on symptom suppression, the proposed approach seeks to reactivate and reorganize residual neural connections to recover functional movement patterns. The workshop will highlight engineering strategies for multi-site stimulation design, neuro-motor biomarker extraction, and robotic-assisted training paradigms that collectively promote neuroplastic adaptation. By merging insights from neuroscience, rehabilitation robotics, and bioelectronic engineering, the session will propose a new therapeutic paradigm that reframes motor rehabilitation as a process of biological circuit restoration, ultimately aiming to improve autonomy and quality of life in individuals with degenerative motor disorders.

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Topics of interest

1. Degenerative Disease Rehabilitation
2. Brain Stimulation and Robotic Rehabilitation
3. Mechanisms inhibiting Neurodegeneration
4. Highly translational rehabilitation methodology

WS13. QEEG-guided precision neuromodulation

Seung-Wan Kang, CEO, iMedicine Inc., Professor, College of Nursing, Seoul National University

Abstract. This workshop is a hands-on program designed for participants to gain practical experience throughout the entire process, from high-quality dry EEG measurement to QEEG analysis, and the design of QEEG-based personalized neuromodulation. Aimed at researchers and postgraduate students in neuroengineering, neuroscience, and BCI, it seeks to enable the immediate application of cutting-edge AI-based quantitative EEG analysis and neuromodulation techniques such as tES, tMS, tPBM, and neurofeedback in both research and clinical settings. Part 1 focuses on understanding the core of QEEG analysis, centered on signal quality management and the interpretation of functional brain mapping within actual EEG measurement environments. Part 2 enables participants to learn the practical application workflow of quantitative EEG-based neuromodulation through designing and experiencing personalized tPBM protocols based on individual QEEG results. Through this, participants will gain practical, analytical, and design capabilities that can be immediately applied within their own research or clinical contexts, moving beyond mere theoretical acquisition.

WS14. Translational Research in Rehabilitation Robotics: From Hospital to Community Care

Won-Kyung Song, Ph.D., National Rehabilitation Center

Joon-Ho Shin, M.D., National Rehabilitation Center

Abstract. This workshop introduces the translational research program in rehabilitation robotics at the National Rehabilitation Center (NRC) and discusses its clinical applications across multiple rehabilitation domains. Translational research plays a critical role in bridging engineering innovation, regulatory readiness, and real-world clinical deployment of rehabilitation technologies.

In rehabilitation robotics, translational research typically consists of four key stages: technology improvement, testing, regulatory approval and certification, and clinical application. These stages ensure that newly developed robotic technologies can move systematically from laboratory prototypes to safe and effective use in clinical practice.

Recent advances in rehabilitation robotics have evolved beyond laboratory prototypes toward evidence-based clinical interventions and service models that support functional recovery and long-term care. In particular, integrating robotic technologies into hospital-based rehabilitation and community care systems has become an important direction for improving accessibility and continuity of rehabilitation services.

This workshop will present clinical and translational research related to upper-limb rehabilitation, ankle and mobility rehabilitation, and pediatric rehabilitation robotics. Speakers will discuss clinical evidence, system design considerations, evaluation methods, and implementation strategies for integrating robotic rehabilitation technologies into healthcare and community environments.

By bringing together clinicians and engineers, the workshop aims to share practical insights into bench-to-bedside-to-community translational pathways and highlight future opportunities for expanding the role of rehabilitation robotics in healthcare systems.

- Current Status and Future Directions of Translational Research in Rehabilitation Robotics, Won-Kyung Song, National Rehabilitation Center
- Effects of Task-Oriented Upper Limb Rehabilitation Training, Joon-Ho Shin, National Rehabilitation Center
- Ankle Rehabilitation Robots and Community Care, Myung-Jun Lim, National Rehabilitation Center
- Clinical Applications of Pediatric Rehabilitation Robots, Hyun-Kyung Kim, National Rehabilitation Center

WS15. From Innovation to Clinical Adoption in Neurorehabilitation: Introducing the Winter School on Clinical Neurorehabilitation (WSCNR2027)

Manuel Murie, Hospital Ciudad de Telde, ICOT group, Canary Islands Institute of Neurological Sciences Foundation, Spain

José L. Pons, Shirley Ryan AbilityLab, Northwestern University, Chicago, U.S.A.; Canary Islands Institute of Neurological Sciences Foundation, Spain

Abstract. New technologies are reshaping neurorehabilitation, not only by expanding the range of available tools, but by changing how we assess patients, guide treatment decisions, and deliver therapy across the clinical pathway. The challenge, however, is no longer innovation alone. It is how to integrate these advances into everyday clinical practice in ways that are meaningful, practical, and sustainable.

This workshop will bring together leading experts to discuss how robotics, wearable sensors, neuromodulation, artificial intelligence, and quantitative assessment are informing new neurorehabilitation treatments and helping move the field toward more personalized and data-informed care. The session will also serve to introduce the Winter School on Clinical Neurorehabilitation (WSCNR2027), a new initiative focused on the implementation and adoption of technology in clinical neurorehabilitation. Alongside invited talks and discussion, The workshop will include a brief interactive hands-on component in which participants will follow the journey from a clinical idea arising from everyday neurorehabilitation practice to the development of a technological solution, and its application to enhance the neurorehabilitation process. They will also see how technology can be used to assess cognitive-motor dual tasking and explore its effects on performance in a practical and engaging way.

Topics of interest

1. AI and data-driven decision support in neurorehabilitation
2. Robotics and wearable technologies in clinical workflows
3. Neuromodulation and stimulation-informed therapies
4. Quantitative assessment and biomarker-guided rehabilitation
5. Personalized treatment design and computational models
6. Clinical implementation, usability, and adoption
7. Training and education for technology-enabled neurorehabilitation
8. Patient-centered innovation and multidisciplinary translation

WS16. Brain-Computer Interfaces in Neurorehabilitation: From Movement Intention to Motor Recovery and Communication

g.tec medical engineering GmbH

Abstract. This workshop will provide a practical introduction to brain-computer interfaces for neurorehabilitation, with a focus on two major clinical application areas: BCI-supported motor recovery and BCI-based assessment and communication. After introducing the basic principles of EEG-based BCI, including signal acquisition, motor imagery, event-related potentials, real-time classification and feedback, the workshop will demonstrate how these concepts can be translated into clinical workflows.

The first part will focus on closed-loop motor rehabilitation using motor imagery, visual feedback and functional electrical stimulation, with recoveriX as a practical example. Participants will learn how movement intention can be detected from EEG activity and transformed into avatar feedback and FES-assisted movement to support active motor training.

The second part will focus on BCI-based assessment and communication in patients with severe neurological conditions, including disorders of consciousness and locked-in syndrome, with mindBEAGLE as a practical example. The workshop will introduce auditory, tactile and motor imagery-based paradigms for detecting command following and enabling basic communication.

The session will combine short presentations, live demonstrations, hands-on interaction, case-based discussion and a final panel discussion. Participants will gain a realistic understanding of how BCI technologies can be integrated into neurorehabilitation practice, how suitable patients can be selected, and how BCI results may support therapy and clinical decision-making.

Wednesday, September 30th				
Time	Track A - Rehabilitation and Wearable Robotics Chairs: Junho Choi, Jiyeon Kang, Denny Oetomo Room A	Track B - AI and Computational Methods for Precision Rehabilitation Chairs: Sang Hoon Kang, Jinsook Roh, Megan K. O'Brien Room B	Track C - Clinical Motor Control Chairs: Dong-Wook Rha, Ghath Andrews Room C	Track D - Neural Interfaces and Stimulation Chairs: Jonghyun Kim, Thomas Bulea Room D
08:30-09:15	Prof. He (Helen) Huang, Plenary Lecture (Room A) Chairs: Jiyeon Kang, Bong-Keun Jung			
09:15-10:45	RWR01 - Soft Robotics as Assistive Devices Chairs: Sabine Thuerau, Hannah Braun	AICM01 - Health AI for Precision Rehabilitation Chair: Chris Easthope Awei	CMC01 - Quantitative Assessment and Intervention of Spasticity Chair: Chuanxin Niu	CTT01 - Remote Palpation & Human-Look-Through Tele-Exams: Extending Clinical Touch with Sensory-Intelligent Robotics Chairs: Shingo Shimoda, Zen Koh
10:45-11:15	Coffee break			
11:15-12:45	RWR03 - Advancing Postural Control and Mobility: Rehabilitation Approaches for Neurological Conditions Chairs: Shijun Yan, Guang H Yue	AICM02A - Artificial Intelligence for Wearable Robotics and Neurorehabilitation (I) Chairs: Pablo Lanillos, David Rodriguez Cianza	CMC02 - From Sensing to Action: Translational Perspectives on Proprioception in Rehabilitation Chairs: Han Gil Seo, Jaewon Beom	CTT02 - Mechatronic ankle foot orthoses – novel concepts and barriers to translation Chairs: Giacomo Severini, Vujaklija
12:45-13:30	Lunch break			
13:30-13:45	Angel Robotics, Spotlight Session (Room A) Chair: Sung-Jae Kang			
13:45-14:30	Prof. Byung-Mo Oh, Plenary Lecture (Room A) Chairs: Hyung-Soon Park, Jaewon Beom			
14:30-16:00	RWR04 - Intelligent Rehabilitation Systems Chairs: Jiyeon Kang, Jungwon Yoon	AICM02B - Artificial Intelligence for Wearable Robotics and Neurorehabilitation (II) Chairs: Jorge Andrés Gómez, Felipe Oliveira Barroso	CMC03 - The role of cycling limb movements in neurorehabilitation Chairs: Jozsef Laczkó, Emilia Ambrosini	RWR06 - The future of neurorehabilitation: collaborative robotics to support the continuum of care Chair: Ananda Sidarta, Siomone Kager
16:00-16:30	Coffee break			
16:30-18:00	RWR05A - From Lab to Life: Human Intention and Interaction in Wearable Rehabilitation Robotics (I) Chairs: D.S.V. Bardara, Kazuo Kiguchi	AICM03 - Reconstructing the Self as Foundations of Next-Generation Neurorehabilitation Chairs: Qi An, Hiroyuki Hamada	CMC04 - Technological Advances in Assessment of Lower-Limb Motor-Rehabilitation Interventions Chair: Peter Barance, Kieran Karunakaran	RWR07 - More Therapy at Home: Opportunities and Challenges of Neurorehabilitation Technologies Chairs: Olivier Lambercy, Glada Devittori

Track A - Rehabilitation and Wearable Robotics

Chairs: Junho Choi, Ji-Yeon Kang, Denny Oetomo

RWR01 - Soft Robotics as Assistive Devices

Chairs: Sabine Thuerauf, Hanna Braun

ID194. Yeongtae Kim and Hyung-Soon Park. 3D-Printed Soft Wearable Glove with Finger Abduction-Adduction Capability for Post-Stroke Hand Rehabilitation

ID241. Marek Sierotowicz and Claudio Castellini. A-mode ultrasound for the estimation of joint stiffness - potential for use in variable impedance assistive robotics

ID376. Cristina Piazza, Maria Fossati and Antonio Bicchi. Beyond Anthropomorphism in Prosthetic Hands: Designing Intelligent Tools for Human Action

ID386. Sabine Thuerauf, Ayşe Betül Demir and Claudio Castellini. Softness on Demand: Concept of Impedance Parameter Adaptation for Upper Limb Assistive Devices

RWR03 - Advancing Postural Control and Mobility: Rehabilitation Approaches for Neurological Conditions

Chairs: Shijun Yan, Guang H Yue

ID113. Hyunje Park, Adriele Rivera, Beom-Chan Lee and Seoung Hoon Park. Synergistic Effects of Phase-Specific Spinal Stimulation and Visual Feedback on Hip Stabilizer Activation Post-Stroke

ID161. Shijun Yan, Iram Hameeduddin, Hyosok Lim, Weena Dee and Ming Wu. Effects of trunk perturbation on motor learning of trunk postural control in children with cerebral palsy

ID271. Huan Min, Ming Liu, Woolim Hong and He Huang. Potential to Link Wearers' Body Image to User Preference for Prosthetic Knee Controllers: A Pilot Study

ID275. Seonjeong Kim, Jinwoo Hwang, Seungjoo Noh, Seo Jung Yun, Yujin Kwon, Han Gil Seo, Keewon Kim and Jinsoo Kim. Evaluation of Personalized Hip Assistance for Gait Improvement in Individuals with Parkinson's Disease

ID300. Kiran K Karunakaran, Christian Sanchez, Guang H Yue and Easter Suviseshamuthu. Evaluating Balance Changes Due to Core Strength Training: A Case Study

RWR04 - Intelligent Rehabilitation Systems and Assistive Robots for Senior Care

Chairs: Jung-Won Yoon, Ji-Yeon Kang

ID002. Adriele Rivera, Hyunje Park, Seoung Hoon Park, Joeun Ahn and Beom-Chan Lee. Treadmill-Delivered Propulsion-Augmenting Training With Real-Time Propulsive-Force Biofeedback for Post-Stroke Gait

ID107. Soubhagya Nayak, Connor Phillips, Megan Eikenberry and Hyunglae Lee. Performance-based Adaptive Robotic Balance Training for Chronic Stroke Survivors: A Pilot Study

ID127. Junyeong Lee, Hyeonbeom Shin, Sunkyung Kim, Minkyung Kim, Jaeyoung Han and Jungwon Yoon. Track-based Overground Gait Symmetry Training of Stroke Patients Using Haptic Assistance Based on Mobile Manipulator Platform

ID169. Junghun Yang, Jun-Il Yoo, Bonsang Gu, Bhola Shivam and Jiyeon Kang. End-to-End Few-View Markerless Pipeline for Video-to-Joint Torque Analysis

ID321. Kyungmin Kwon, Youngkee Kim and Jiyeon Kang. A Novel Neurophysiological Parameter Sweep Design to High-Intensity Balance Perturbations

RWR05A - From Lab to Life: Human Intention and Interaction in Wearable Rehabilitation Robotics (I)

Chairs: D.S.V. Bandara, Kazuo Kiguchi

ID130. Pin-Hsuan Su and Biing-Chwen Chang. Knee Extensor Assistance in Stance Phase during Stair Ascent with Knit-Covered Pneumatic Assistive Device

ID157. Myunghee Kim, Dimuthu Kodippili Arachchige, Sruthi Ramadurai and J Cortney Bradford. From Signals to Support: Personalizing Coaching and Assistance with Wearable Robots

ID232. Sayaka Morinaga, Satoshi Nishikawa and Kazuo Kiguchi. Effect of Artificial Visual Information on Kinesthetic Illusion Induced by Vibration Stimulation for Elbow Joint Motion

ID330. D.S.V. Bandara and Jumpei Arata. Hierarchical EMG Decoding for Intention-Driven Hand Rehabilitation

RWR06. The future of neurorehabilitation: collaborative robotics to support the continuum of care

Chairs: Ananda Sidarta, Simone Kager

ID025. Atsushi Takagi, Yanan Li, Hiroaki Gomi and Etienne Burdet. Intention Assimilation Control: Decoupling Tracking Accuracy from Stiffness for Safe Telerehabilitation

ID185. Seong-Hoon Lee and Won-Kyung Song. Force-Field Effects on Bimanual Robotic Reaching Training: A 4-Week Single Case Study

ID226. Jia Quan Loh, Vincent Crocher, Marlana Klaic, Denny Oetomo and Ying Tan. Learning Personalised Physical Patient-Therapist Interactions towards Varying Task Conditions in Neurorehabilitation

ID285. Jacqueline L Mair, Alexandra Retevoi, Akshaye Shenoi, Giada Devittori, Tobias Kowatsch and Olivier Lamercy. Promoting adherence to home-based stroke rehabilitation through LLM-based motivational coaching agents

RWR07. More Therapy at Home: Opportunities and Challenges of Neurorehabilitation Technologies

Chairs: Olivier Lambercy, Giada Devittori

ID049. Hao-Ping Lin, Hsiao-Ju Cheng, Simone Kager, Anoop Sinha, Irina Hungerbuehler, Christopher Kuah, Chwee Yin Ng, Tegan Plunkett, Megan Si En Lau, Sijie Lin, Chi Onn Tang, Filzah Sumartono, Jia Ying Yee, Roger Gassert, Karen Chua, Nicole Wenderoth and Olivier Lambercy. Feasibility of the Technology-Assisted Rehabilitation Gym for at-home Training (TARGeT) Trial for Stroke Survivors

ID051. Giada Devittori, Daria Dinacci, Antonella Califfi, Claudio Petrillo, Paolo Rossi, Roger Gassert and Olivier Lambercy. Unsupervised robot-assisted upper-limb therapy at home after stroke: feasibility and challenges

ID082. Gyeol Jeong, Kyu Bum Kim, Joon-Ho Shin, Daekyum Kim and Kyu-Jin Cho. A Vision-Based Intention Detection Framework for Multi-Object Scenarios using Wearable Robotic Hand

ID106. Natalie Tanczak, Tegan Kate Plunkett, Sijie Lin, Megan Lau, Christopher Wee Keong Kuah, Chwee Yin Ng, Karen Sui Geok Chua, Roger Gassert and Olivier Lambercy. Evaluation of the immediate functional effect of a soft robotic hand exoskeleton for assisting activities of daily living after stroke

ID261. Seungmin Ye, Hyung-Soon Park and Yejoon Kim. Home-Based Closed-Loop Hand Rehabilitation System with Intention Recognition, Cable-Driven Actuation, and FES

Track B - AI and Computational Methods for Precision Rehabilitation

Chairs: Jinsook Roh, Megan O'Brien

AICM01 - Health AI for Precision Rehabilitation

Chair: Chris Easthope Awai

ID121. Tim Unger, Olivier Lambercy, Roger Gassert, Andreas R. Luft, R. James Cotton and Chris Easthope Awai. Convergent Validity Between Upper Limb Kinematic Metrics from Markerless Motion Capture and ARAT Scores in Routine

ID231. R. James Cotton. A Causal Framework for Precision Rehabilitation

ID341. Saskia Neumann, Chris Easthope Awai and Jose Albites-Sanabria. Large-Scale Activity Analytics for Clinical Decision Making Across Pathologies: Bridging the Real-World Data Gap

ID355. Johannes Pohl, Tim Unger, Elisa Du, Thomas Weikert, Mathias Bannwart, Meret Branscheidt and Chris Easthope Awai. Clinical integration of continuous sensing technologies for assessment and intervention

AICM02A - Artificial Intelligence for Wearable Robotics and Neurorehabilitation (I)

Chairs: Pablo Lanillos, David Rodriguez Cianca

ID167. Huiyi Wang, Étienne Goubault, Christian Larivière, Calder Robbins, Hyoungseo Son, Seungmoon Song and Guillaume Durandau. Neuromusculoskeletal Model for Predictive Simulation of Assistive Devices

ID176. Damián Benasco, Juan Carballeira López, Jaime Ramos-Rojas, Julio Salvador Lora-Millán, Antonio J. Del-Ama, David Rodriguez-Cianca and Pablo Lanillos. Diffusion-Based Generation of Gait Trajectories

ID183. Vicente Quiles Zamora, Cristina Polo-Hortiguera, Desirée I. Gracia, Mario Ortiz, Eduardo Iáñez and Jose M. Azorin. Exploiting Neural Network Output Probabilities and Decision Thresholds for Robust Motor Imagery Decoding in BMI Lokomat Rehabilitation

ID208. Ke Feng, Thomas Yang and Shuzhen Luo. Autonomous Reinforcement Learning-Based Hip Exoskeleton Assistance for Mobility Enhancement in Older Adults

ID291. Andres Chavarrias, David Rodriguez-Cianca, Daniel Haeufle and Pablo Lanillos. Soft Exoskeleton Control with Musculoskeletal Deep Reinforcement Learning

AICM02B - Artificial Intelligence for Wearable Robotics and Neurorehabilitation (II)

Chairs: Jorge Andrés Gómez, Filipe Oliveira Barroso

ID055. Lluís Bernat, Raquel Martínez-Pérez, Gabriel J. Garcia and Andres Ubeda. Rotational Displacement Detection of a HD-EMG Dry Electrode Armband

ID212. Xinyue Li and Takashi Watanabe. An Evaluation of Single-IMU-Based 3D Lower-Limb Joint Angle Estimation During Normal Gait of Healthy Subjects

ID229. R. James Cotton. AI-Powered Biomechanics for Precision Rehabilitation

ID280. Annemarie Laudanski, Jorge A Gómez-García, Marina Algaba-Vidoy, Adriana Torres-Pardo, Carlota Trigo-La Blanca, Víctor Navarro López, Diego Fernández Vázquez, María Carratalá Tejada, Francisco Molina Rueda, Eduardo Rocon and Diego Torricelli. A Multimodal Approach for Parkinson's Disease Detection

ID281. Johann Ullrich and Isabell Wochner. Bio-Inspired Modelling of Spinocerebellar Pathways for Upper Limb Movement Simulation

AICM03 - Reconstructing the Self as Foundations of Next-Generation Neurorehabilitation

Chairs: Qi An, Hiroyuki Hamada

ID007. Matti Itkonen, Satsuki Yamauchi, Nima Hadavi, Jere Lavikainen and Qi An. A Virtual Reality Paradigm for Investigating Body Representation via Visuoproprioceptive Misalignment During Upper-Limb Movement

ID027. Satsuki Yamauchi, Matti Itkonen, Shingo Shimoda and Hitoshi Hirata. Directional Visuoproprioceptive Mismatch Differentially Affects Body Ownership and Sense of Agency

ID210. Tadamitsu Matsuda, Kei Kakegawa, Junya Ogawa, Yuki Soutome and Yuji Fujino. Perceptual–Motor Discrepancy of Arm Swing During Gait in Parkinson's Disease: Implications for Body Schema

ID350. Emiko Uchiyama and Kohei Kaminishi. Dynamic Change of the Body of Pregnant Women and Its Effects on Their Sense of Self and Physical Abilities

Track C - Clinical Motor Control

Chairs: Dong-Wook Rha, Ghaith Androwis

CMC01 - Quantitative Assessment and Intervention of Spasticity

Chairs: Chuanxin Niu

ID013. Hamza Ahmed, Muhammad Abid Khan, Meeran Hasnain and Raman Kumar. Effects Of Instrument-Assisted Soft Tissue Mobilization vs. Neurodevelopmental Therapy on Motor Function in Children with GMFCS Level I and II Spastic Diplegic Cerebral Palsy

ID095. Karien ter Welle, Alfred Schouten, Winfred Mugge, Jonathan van Zanten, Erwin van Wegen, Arno Stienen, Remco Timmermans, Carel Meskers and Mark van de Ruit. The ASSIST Study: Comprehensive Instrumented Neuromechanical Assessment of Elbow Spastic Paresis in Clinical Practice

ID288. Chuanxin Niu, Jin Yan, Zhi Chen, Zeyu Wang, Siyu Yin and Qing Xie. Emulation of Spastic Motoneuron Spikes using a Neuromorphic Model of Spasticity (NEUSPA)

CMC02 - From Sensing to Action: Translational Perspectives on Proprioception in Rehabilitation

Chairs: Han Gil Seo, Jaewon Beom

ID110. Han Gil Seo. Evaluation and Training of Upper Limb Proprioception: Focusing on Its Role in Neurorehabilitation

ID168. Song Joo Lee. Assessment and Training of Lower-Limb Proprioception in Pivoting Direction

ID371. Youngjoon Baek and Yong-Lae Park. From Inter-Segment Lengths to Joint Proprioception: A Wearable Sensing Approach for Multi-DOF Motion Estimation

ID407. Jaewon Beom. Functional Neuroanatomy and Measurement of Proprioception

CMC03 - The role of cycling limb movements in neurorehabilitation

Chairs: Jozsef Laczko, Emilia Ambrosini

ID064. Kevin Power and Ibrahim Refai. Arm Cycling as a Translational Model of Locomotion: Modulation of Neural Excitability and Implications for Neurorehabilitation

ID149. Jozsef Laczko, Balazs Radeleczki, Boglarka Rigo and Mariann Mravcsik. How hybrid FES cycling training may shape joint coordination during walking in patients with incomplete spinal cord injury

ID255. Claudio Pizzolato, Dinesh Palipana, Kyle Mulholland, Alastair Quinn, Yana Salchak, Isabella Faranda, Callum Eastwell, Evan Jurd, Kelly Clanchy, Ezekiel Duffy, Claire Crossley, Nathan Lyons, Matthew Carrall-Worsey, Malik Mannan, Matthew Hambly and David Lloyd. Multimodal lower limb cycling improves upper limbs clinical scores and reduces spasticity in people with chronic spinal

ID292. Thomas W.J. Janssen, Glen M. Davis, Kristin E. Musselman, Ines Bersch-Porada, Ashraf S. Gorgey, Kristen Walden, Chester Ho and Hope Jervis-Rademeyer. Standardizing FES Cycling for Spinal Cord Injury: Development of an International Clinical Practice Guideline

CMC04 - Technological Advances in Assessment of Lower-Limb Motor-Rehabilitation Interventions

Chairs: Peter Barrance, Kiran Karunakaran

ID075. Peter Barrance, Guang Yue, Bing Yao, Glenn Wylie and Gail Forrest. Muscle functional MRI of quadriceps activation in healthy participants: implications for spinal cord injury

ID158. Kiran Karunakaran, Guang H Yue and Easter Suviseshamuthu. Evaluating Postural Stability and Balance in TBI Using Accelerometry

ID159. Easter Suviseshamuthu, Guang H Yue and Kiran K Karunakaran. Association Between Perturbation-Based Muscle Activation Onsets and Balance Function in TBI

ID297. Vikram Shenoy Handiru, Jalen Winfield, Easter Selvan Suviseshamuthu, Elisa Kallioniemi, Christina Dandola, Kimberly Kesten and Guang H. Yue. TMS-EEG Markers of Balance Impairment in Stroke and TBI

Track D - Neural Interfaces and Stimulation

Chairs: Jong-Hyun Kim, Thomas Bulea

NIS01 - From Brain to Spinal Cord: Neuromodulation technologies driving recovery

Chair: Gail Forrest

ID092. Claudia Angeli, Steven Kirshblum and Gail Forrest. Voluntary Movement Improvement following Motor-specific Training with Epidural Stimulation in SCI

ID348. Karen J. Nolan, Gregory R. Ames, Sharon Franco, Mitchell Tillman and Arun Jayaraman. Transcutaneous Spinal Stimulation & Gait Training Improves Functional Ambulation in Chronic TBI

ID382. Fan Zhang, Manikandan Ravi, Manan Ajaria and Gail Forrest. Linking Targeted Transcutaneous Spinal Stimulation Responses to Upper Limb Function in Chronic Cervical Spinal Cord Injury

ID401. Ghaith J. Androwis, Guang H. Yue and Steven Kirshblum. Network-Targeted Electromagnetic Neuromodulation Improves Upper Limb Function in Chronic Spinal Cord Injury

NIS02 - Synergy-Based new therapies and interventions for Motor Recovery After Stroke

Chair: Jose L. Pons, Xin S. Yu

ID034. Jackson Levine, Xin S. Yu, Rebecca Muñoz, Alaina Fiorenza, Emilia Ambrosini, Simona Ferrante, Elliot Roth, Jozsef Laczko, Alessandra Pedrocchi and Jose L. Pons. Synergy-based FES gait training enhances endurance in pilot study

ID177. Xiaoyu Guo, Kelvin Y.S. Lau, Roy T.H. Cheung, Ning Lan, Rosa H.M. Chan and Vincent C.K. Cheung. Longitudinal Changes of Muscle Synergies for Walking Induced by Synergy-based Functional Electrical Stimulations in Chronic Stroke Survivors

ID342. Manuel Portilla-Jiménez, Sean Chakraborty, Supraja Vaidhyanathan, Gang Seo, Yoon No Gregory Hong, Michael Houston, Sheng Li, Hyung-Soon Park, Yingchun Zhang, Martina Coscia and Jinsook Roh. Muscle Synergy-Guided Exercise Facilitates Spinal Motoneuronal Plasticity in Stroke: A Pilot Study

ID390. Geng Li, Robert Salati, Spencer Williams, Shuo-Hsiu Chang, Jose Pons, Gerard Francisco and Benjamin Fregly. Clinical Limitations of Personalized Synergy-based FES Treatment for Post-Stroke Walking: A Predictive Simulation Study

NIS03 - Revolutionizing Hand Prosthesis by Restoring Biorealistic Sensorimotor Functions

Chair: Ping Zhou

ID011. Xuhui Hu, Jiachen Zhang, Zhikai Wei, Aiguo Song and Dosen Strahinja. Continuous Force Feedback Outperforms Vibrotactile in Closed-Loop Control of Myoelectric Prostheses

ID029. Xueqian Liang, Xiaodong Na, Wei Cao, Tianzhe Bao and Benzhen Wei. A Hybrid Multi-Scale Transformer for sEMG Gesture Recognition

ID042. Liang Wenyuan, Xie Anran, Tian Lan, Chendi Liang, Bi Sheng and Ning Lan. Non-Invasive Sensory Feedback via Evoked Tactile Sensation Enhances Prosthetic Sensorimotor Performance

ID057. Qiyun Tan, Guanglin Li and Peng Fang. Reconstruction of Sensory Feedback for Upper-limb Amputees by Transcutaneous Electrical Nerve Stimulation

NIS04 - Reawakening the Spinal Cord: Transcutaneous Spinal Cord Stimulation for Motor Recovery

Chair: Arun Jayaraman

ID019. Jose Gomez Tames. Preliminary Evaluation of Anatomy-Robust Optimization for Transcutaneous Interferential Spinal Cord Stimulation

ID022. Mitchell Tillman and Arun Jayaraman. Transcutaneous Spinal Cord Stimulation-Augmented Treadmill Gait Training in Chronic Stroke: Single-Session and Preliminary Longitudinal Effects on Step Length

ID026. Arun Jayaraman. Transcutaneous Spinal Cord Stimulation for Pediatric Cerebral Palsy

ID346. Karen J. Nolan, Gregory R. Ames, Sharon Franco, Mitchell Tillman and Arun Jayaraman. Transcutaneous Spinal Stimulation & Gait Training Enhances Spinal Motor Network Excitability in Individuals with TBI

ID381. Akhil Bheemreddy, Einat Engel-Haber, Mehmed Bugrahan Bayram, Manikandan Ravi, Manan Anjaria and Gail F. Forrest. Neuromodulation of Blood Pressure and Motor Activation Response

Track E - Clinical Translation and Industry Track

Chairs: Zen Koh, Bong-Keun Jung, Jesus Tornero

CTIT01. Remote Palpation & Human-Look-Through Tele-Exams: Extending Clinical Touch with Sensory-Intelligent Robotics

Chairs: Shingo Shimoda, Zen Koh

ID114. Shotaro Okajima, Riku Kawabata and Shingo Shimoda. Development of Platform for Distributed and Multimodal Real-Time Measurement and Visualization of Human Movement and Biosignals

ID144. Hiroki Yokoyama, Michiro Yamamoto and Shingo Shimoda. Impact of Remote palpation Using Contact Reality Interface on Patient Satisfaction in Telemedicine

ID252. Riku Kawabata, Shotaro Okajima, Clara Sanz-Morère, Juan Moreno, Akinori Nagano, Daisuke Tonari, Hisaki Makimoto, Tomokazu Shimazu, Qi An and Shingo Shimoda. A Wearable Force Plate Enables Real-World Ground Reaction Force and Center of Pressure Measurement

ID362. Eric Perreault and Mahdi Ebrahimkhani. Toward Quantitative Remote Palpation: Ultrasound-Based Estimation 3D Mechanical Properties In Vivo

CTIT02. Mechatronic ankle foot orthoses – novel concepts and barriers to translation

Chairs: Giacomo Severini, Ivan Vujaklija

ID065. James Flack, Mengnan Wu and Tom Verstraten. Enabling Flexible Shaft Remote Actuation in Wearable Robotics via a Novel Conduit Design

ID118. Eduardo Saman, Andrea Baroni, Mariagrazia Buongiorno, Gabriele Perachioti, Giulia Fregna, Sofia Straudi, Giacomo Severini and Jose González. What factors determine the success of orthoses? A multidimensional approach for orthosis design and development

ID122. Aurora Silanos, Eduardo Saman, Viktor Hörig, Jose González-Vargas and Giacomo Severini. Ankle–Foot Orthoses: State of the Art and Market Analysis

ID173. Hangeol Song, Matthew Lerner, Aaron Young and Gregory Sawicki. Biomechanics Data-Driven Design of a Lightweight Cable-driven Ankle Exoskeleton for Task-Agnostic Community Ambulation

ID392. Ivan Vujaklija, Jonathan Do, Madalina Moscu and Marta Mirkov. Towards Context-Aware Multimodal Interface for Truly Wearable Mechatronic Ankle-Foot Orthosis Control

Thursday, October 1st				
Time	Track A - Rehabilitation and Wearable Robotics Chairs: Junho Choi, Jiyoon Kang, Denny Delomo Room A	Track B - AI and Computational Methods for Precision Rehabilitation Chairs: Sang Hoon Kang, Jinsook Roh, Megan K. O'Brien Room B	Track C - Clinical Motor Control Chairs: Dong-Wook Rha, Ghaith Andrews Room C	Track D - Neural Interfaces and Stimulation Chairs: Jonghyun Kim, Thomas Bulea Room D
08:30-09:15	Prof. B.J. Frejly, Plenary Lecture (Room A) Chairs: Jose L. Pons, Jesus Tornero			
09:15-10:45	RWR09 - Human Connection Through Robots: A New Paradigm for Neurorehabilitation Chair: Marta Gandolla	AICM05 - Motor and Cognitive Biomarkers in Neurorehabilitation: A Data-Driven Perspective Chairs: Marianna Sempirini, Jorge Gomez Garcia	CMC06A - Advanced Methods and Techniques in Clinical Motor Control and Neurorehabilitation (I) Chair: Dong-Wook Rha	NIS06 - Spinal Cord Epidural Stimulation a tool for multisystem recovery following spinal cord injury Chair: Claudia Angeli
10:45-11:15	Coffee break			
11:15-12:45	RWR11 - Pros, Cons and Challenges during modern technology based post-stroke rehabilitation Chairs: Luca Toth, Péter Maróti	AICM06 - Neuromuscular modeling from electrophysiological signals: from muscles to brain Chair: Andres Ubeda	CMC06B - Advanced Methods and Techniques in Clinical Motor Control and Neurorehabilitation (II) Chairs: Joosun Ahn, Beom-Chan Lee	NIS07 - Brain-Computer Interface, Robotic Devices, and Non-Invasive Brain-Muscular Stimulation for Rehabilitation of Chronic Stroke Chairs: Teodiano Bastos-Filho, Ana Cecilia Villa Parra
12:45-13:45	Lunch break			
13:45-14:30	Prof. Aaron Young, Plenary Lecture (Room A) Chairs: Hyung-Soon Park, Song Joo Lee			
14:30-16:00	RWR02A - From Data to Action: Wearable Sensor Technology to Drive Neurorehabilitation (I) Chair: Megan K. O'Brien	AICM07 - Computational Methods and Techniques in Neurorehabilitation Chair: Seungbum Koo	NIS11 - Emerging Neuroengineering Technologies for Personalized Neurorehabilitation and Diagnostics Chair: Minkyu Ahn	NIS08 - Peripheral Stimulation for Movement Disorders Management Mechanisms, Technologies and Clinical Translation Chair: Jose L. Pons
16:00-16:30	Coffee break			
16:30-17:45	Poster Session	Poster Session	Poster Session	Poster Session
17:45-19:00	Poster Session	Poster Session	Poster Session	Poster Session

Track A - Rehabilitation and Wearable Robotics

Chairs: Junho Choi, Ji-Yeon Kang, Denny Oetomo

RWR09 - Human Connection Through Robots: A New Paradigm for Neurorehabilitation

Chair: Marta Gandolla

ID028. Beatrice Luciani, Alex van den Berg, Matti Lang, Alexandre L. Ratschat and Laura Marchal-Crespo. From Automation to Facilitation: Designing Robotic Systems as Intuitive Interfaces for Therapist-Patient Connection

ID033. Lorenzo Amato, Lorenzo Vianello, Emek Küçüktabak, Alberto Cantón, Matthew Short, Jesus Tornero and Jose L. Pons. Therapist–Robot–Trainee Interaction for Gait Rehabilitation

ID141. Mohammad Sohorab Hossain and Vesna Novak. Toward Automated Exercise Adaptation in Collaborative Neurorehabilitation using Physiological Responses

ID223. Francesco Di Tommaso, Lorenzo Vianello, Matthew Short, Domenico Formica, Nevio Luigi Tagliamonte and Jose Pons. Modulation of Coupling Stiffness in Physical Patient-Robot-Therapist Interaction

ID384. Sébastien Muheim, Sri Sai Sathvik Kadimisetty, Lauren Stephanie Waiman Chee, Nicolas Gerig and Georg Rauter. Towards Robot-Mediated Physical Human–Human Interaction in Overground Gait Rehabilitation: Therapist-in-the-Loop FLOAT

RWR11 - Pros, Cons and Challenges during modern technology based post-stroke rehabilitation

Chairs: Luca Toth, Péter Maróti

ID071. Saskia Neumann, Yann Ennassih, Jose Albites-Sanabria, Tim Unger, Irina Djuraskovic, J.D. Peiffer, R. James Cotton and Chris Easthope. Validating Monocular Markerless Motion Capture as a Practical Tool for Temporal Gait Assessment in Clinical and Ecological Scenarios

ID328. Péter Maróti, Luca Tóth, Roland Told, Attila Péntek and Judit Pongrácz. Personalized 3D Printed Hand Orthosis for Post Stroke Spasticity: Functional Evaluation and Sterilization Properties

ID334. Peter Hillebrand, Péter Kupó, Viktória Tamás, Szilárd Rendeki, Péter Maróti and Luca Tóth. Virtual Reality in Patient Education and Training of Unilateral Visuospatial Neglect Syndrome

ID365. Luca Toth, Attila Péntek, Éva Aradi, Alexandra Straub, Árpád Sipőcz and Péter Maróti. Leap Motion–Based Markerless Hand Kinematic Assessment in Acute Post Stroke Patients: A Feasibility Study

RWR02A - From Data to Action: Wearable Sensor Technology to Drive Neurorehabilitation (I)

Chair: Megan O'Brien

ID015. Heesoo Kim, Bohyung Choi and Jae-Woong Jeong. Seamless Wearable Electrophysiological Sensors for Advanced Rehabilitation and Assistive Technologies

ID154. Megan O'Brien, Francesco Lanotte, Katelyn Aragon, Anthony Chau and Arun Jayaraman. Stroke Recovery Toolkit: Leveraging wearables data for comprehensive patient assessment and precision intervention

ID204. Peter B. Shull. Real-time Biofeedback from Wearable Sensors to Accelerate Adaptive Motor Learning

ID248. Kaymie Shiozawa, Sukirat Bhullar, Teresa Baker, Sara Zoeller, Matthias Jammot, Franchino Porciuncula, Chih-Kang Chang, Andrew Chin, Nicole Eklund, Paul Sabin, Lou Awad, Terry Ellis and Conor Walsh. Sensor-informed soft robotic apparel assistance improves gait biomechanics in Parkinsonian freezing of gait

Track B - AI and Computational Methods for Precision Rehabilitation

Chairs: Jinsook Roh, Megan O'Brien

AICM05 - Motor and Cognitive Biomarkers in Neurorehabilitation: A Data-Driven Perspective

Chairs: Marianna Semprini, Jorge Gomez Garcia

ID76. Eleonora Guanziroli, Caterina Piazza, Federica Locatelli, Nicolas Diani, Angelo Bellinva and Franco Molteni. Autonomic modulation and functional effects of artificial natural-light simulation on post stroke survivors

ID100. Indya Ceroni, Eleonora Guanziroli, Franco Molteni and Marianna Semprini. Impact of Float Exoskeleton on the Modularity of Anterior Reaching in Chronic Post-Stroke Subjects

ID133. Sergey Bordovsky, Renata Murtazina, Sergey Andreev, Kseniya Shevtsova, Oksana Zinchenko and Vladimir Parfenov. Transcranial direct current stimulation in Parkinson's

ID155. Jorge Andrés Gómez-García, Valerio Antonio Arcobelli, Serena Moscato and Diego Torricelli. A Multilayered Approach to Interoperability in Human Biomechanics: The path to EUROBENCH 2.0

ID277. Mouhamed Zorkot, Luka Maksimovic, Daniela M.O. Utiyama, Andre T. Sugawara, Erica C. Leite, Rafael F. V. de Melo, Silvestro Micera, Solaiman Shokur, Linamara Batistella and Mohamed Bouri. Real-Time Gait Event Detection in Stroke and Spinal Cord Injury: Algorithmic Strategies, Sensor Placement, and Insights for Rehabilitation Applications

ID317. Annemarie Laudanski, Pablo Romero Sorozábal, Sara Alvarez Herranz and Eduardo Rocon. Exploration of Multimodal Neuromechanical Biomarkers for Classifying GMFCS Severity and Tracking Longitudinal Motor Adaptation in Pediatric Cerebral Palsy Rehabilitation

AICM06 - Neuromuscular modeling from electrophysiological signals: from muscles to brain

Chair: Andres Ubeda, Alvaro Costa-Garcia

ID001. Alvaro Costa Garcia and Akihiko Murai. Single Channel sEMG Conduction Velocity Estimation via MUAP Modelling and EMS

ID054. Cristina Romero, Álvaro Costa, Carlos Alberto Jara and Andrés Ubeda. Linear stability in the modulation of HD-EMG spectral components during fatiguing isometric contractions

ID066. Desirée I. Gracia, Chan-Shien Ho, Mario Ortiz, José L. Pons, Eduardo Iáñez and Jose M. Azorin. Case study on Isometric Ankle Control Assessed Through Electrosinography and Electromyography Signals

AICM07. Computational Methods and Techniques in Neurorehabilitation

Chairs: Seungbum Koo

ID221. Junyo Boo and Seungbum Koo. Compensatory Muscle Activation and Resultant Ligamentous Loading Changes in PCFD: A Forward-Dynamics Simulation Study

ID337. Annika Gram, David Zeugin, Loredana Catinari, Yann Perret, Andrea Serino, Sonia Crottaz-Herbette and Daniel Pérez-Marcos. Enhanced Detection of Extrapersonal Spatial Neglect Using Immersive Virtual Reality, Eye-Tracking, and Machine Learning

ID364. Minho Chae and Sukyung Park. Ground Reaction Force Estimation from a Single Wrist IMU in Older Adults via Transfer Learning from Young Adult Gait

ID391. Giada Parodi, Ludovica Viola, Arianna Li Noce, Laura Bandini, Giancarlo Mascetti, Cecilia De Vicariis and Vittorio Sanguineti. Human contribution to game-theoretic active-assisted reaching

ID94. I-Han Cheng, Karan Malhotra, Peter W. Snow, Steve Taylor and Rui C.V. Loureiro. Predictive Neuromusculoskeletal Simulation of Posterior Tibialis Tendon Transfer for the Rehabilitation of Neurological Foot Drop

Track C - Clinical Motor Control

Chairs: Dong-Wook Rha, Ghaith Androwis

CMC06A - Advanced Methods and Techniques in Clinical Motor Control and Neurorehabilitation (I)

Chair: Dong-Wook Rha

ID059. Cosima Prahm, Hannah Blaurock, Hakan Candar, Alexander Hönning, Leila Harhaus-Wähner and Michael Bressler. MyoOsu - Usability and Clinical Evaluation of a Music-Based EMG-controlled Game for Pre-Prosthetic Motor Training

ID215. Wanyi Qing, Hantao Song, Fuqiang Ye, Legeng Lin, Yixun Wang, Mingxin Jiang, Honwah Wai, Waisang Poon, Weiwei Ye, Yanhuan Huang and Xiaoling Hu. Internet-of-Exoneuromusculoskeleton (Io-ENMS)-Assisted Self-help Post-stroke Gait Telerehabilitation with Continuous Progress Management

ID289. Xiaoqian Min and Ke Li. A Bilateral Upper-Limb Exoskeleton Robot for Quantitative Mirror Rehabilitation

ID402. Ghaith J. Androwis, Mohammed Huzien, Brett R. Gordon, Guang Yue and Steven Kirshblum. Upper Extremity Functional Outcomes Following Use of a Myoelectric Powered Orthosis in Chronic Spinal Cord Injury

CMC06B - Advanced Methods and Techniques in Clinical Motor Control and Neurorehabilitation (II)

Chairs: Joeun Ahn, Beom-Chan Lee

ID080. Jeonghoon Oh, Alexander Steele, Michelle Scheffler, Catherine Martin, Argýrios Stampas, Radha Korupolu, Amir Faraji, Phillip Horner and Dimitry Sayenko. Optimization of epidural spinal stimulation for upper limb recovery after complete cervical spinal cord injury

ID085. Gaju Shin, Chihyeong Lee, Seoung Hoon Park, Beom-Chan Lee and Joeun Ahn. Short-term Transfer of Propulsion-Targeted Treadmill Training to Overground Gait Symmetry and Weaker-Limb Ankle Joint Entropy in Older Adults

ID370. Georgii Kurshakov, Andrea Maffia, Monica Parodi, Ludovica Viola, Tiziano Cosso, Giorgio Delzanno and Vittorio Sanguineti. Towards Outdoor Human Motion Capture for Neurorehabilitation Based on IMU and Satellite Positioning

Track D - Neural Interfaces and Stimulation

Chairs: Jong-Hyun Kim, Thomas Bulea

NIS11 - Emerging Neuroengineering Technologies for Personalized Neurorehabilitation and Diagnostics

Chair: Minkyu Ahn

ID053. Hyejeong Han, Yerim Huh, Yun-Hee Kim and Minji Lee. Longitudinal EEG Markers of Motor Recovery After Non-Invasive Brain Stimulation in Stroke

ID087. Minh Duc Hoang, Doeun Kim, Yunjong Lee and Sung-Min Park. A Miniature Fully Wireless Wearable System for Closed-loop Neuromodulation in Mice

ID123. Hyeong-Yeong Park, Se-Na Jang, Seong-Wook Kim and Ji-Hoon Jeong. Ensemble Attention-gating EEG Decoding Framework towards Semantic Neural Language Translation

ID129. Seungmin Bang, Daeun Gwon, Seungjun Ryu, Hyundong Yoo and Minkyu Ahn. Altered State-Dependent Gamma-Band EEG Activity in Ruptured Cerebral Aneurysm Patients During Anesthesia Induction

ID133. Sergey Bordovsky, Renata Murtazina, Sergey Andreev, Kseniya Shevtsova, Oksana Zinchenko and Vladimir Parfenov. Transcranial direct current stimulation in Parkinson's Disease

NIS06 - Spinal Cord Epidural Stimulation a tool for multisystem recovery following spinal cord injury

Chair: Claudia Angeli

ID093. Claudia Angeli, Todd Linsenmeyer, Steven Kirshblum and Gail Forrest. Application of Spinal Cord Epidural Stimulation to Improve Bladder Function in Subacute Spinal Cord Injury: A Case Study

ID234. Tommaso Lambresa, Daniele Emedoli, Filippo Gasperotti, Federico Colombo, Filippo Agnesi, Simone Romeni, Sandro Iannaccone, Luigi Albano, Pietro Mortini, Silvestro Micera and Solaiman Shokur. Longitudinal Stabilometric Assessment of Standing Recovery via eSCS and Rehabilitation in Motor Complete SCI

ID246. Claudia Angeli, Steven Kirshblum and Gail Forrest. Preserved Voluntary Motor Control and Enhanced Intermuscular Coherence with Epidural Stimulation in an individual with SCI

ID369. Mehmed Bugrahan Bayram, Manikandan Ravi, Manan Anjaria, Claudia Angeli, Susan Harkema and Gail F. Forrest. Augmenting stand activity-based training with dynamic exercises asks during spinal cord epidural stimulation: A Case Study

ID404. Gail Forrest, Akhil Bheemreddy, Manikandan Ravi, Manan Anjaria, Susan Harkema and Claudia Angeli. Linking Neural Drive to the Transition to Independent Standing After Activity-Based Recovery Training with Epidural Stimulation in Cervical Spinal Cord Injury

ID353. Hui Yu Koh, Xun Li, Carol Er, Megan Si En Lau, Pablo Cruz Gonzalez, Ananda Sidarta and Karen Sui Geok Chua. Exploring the Mental Health Dimensions in Stroke Rehabilitation

NIS07 - Brain-Computer Interface, Robotic Devices, and Non-Invasive Brain-Muscular Stimulations for Rehabilitation of Chronic Stroke

Chairs: Teodiano Bastos-Filho, Ana Cecilia Villa Parra

ID003. Teodiano Freire Bastos Filho and Ana Cecilia Villa-Parra. Evaluating the Combination of New Technologies for Rehabilitation of Chronic Stroke

ID010. Mauro Callejas-Cuervo, Andrea Catherine Alarcon-Aldana, Rosy Paola Cárdenas-Sandoval, Mario Fernando Jimenez Hernandez and Sonia Rocio Moreno-Castelblanco. Architectural Proposal of an Optimised BCI-EEG Platform for Upper and Lower Limb Rehabilitation through Real-Time Visual Biofeedback

ID117. Anacecilia Villa-Parra and Teodiano Freire Bastos Filho. Control of Robotic Rehabilitation Devices based on Emotiv EPOC: A Preliminary Study

ID151. Aura Ximena Gonzalez Cely, Cornelius Leon Angerhoefer, Surjo Raphael Soekadar, Denis Delisle Rodriguez and Teodiano Freire Bastos-Filho. Cortical Activation During SMR-Based BCI Control of Morning Walk Gait Rehabilitation Robot

ID139. Víctor Martínez-Cagigal, Eduardo Santamaría-Vázquez, Selene Moreno, Sergio Pérez-Velasco, Ana Císal, Diego Marcos-Martínez, Juan C. Fraile, Javier Pérez-Turiel and Roberto Hornero. A novel BCI platform for post-stroke upper-limb neurorehabilitation: A feasibility study

ID200. Ilham Rais and Tomohiko Igasaki. Toward taVNS for Stroke Rehabilitation: Multimodal ECG-EEG Analysis Reveals Distinct Response Phenotypes

NIS08 - Peripheral Stimulation for Movement Disorders Management: Mechanisms, Technologies and Clinical Translation

Chair: Jose L. Pons

ID072. Shriniwas Patwardhan and Thomas Bulea. Closed-Loop Control of Functional Electrical Stimulation using Ultrasound: Preliminary Feasibility in Individuals with Cerebral Palsy

ID213. Kei Nakayoshi and Takashi Watanabe. A Feasibility Study through Model Simulation of Closed-loop FES Control of Reaching Movement Using Real-time Generation of Target Trajectory

ID270. Jumpei Kashiwakura, Patrick Alva, Paul Bentley and Dario Farina. VIPAS: A Wearable Neuromodulation Technology for Volition-Induced Paired Associative Stimulation to Improve Post-Stroke Motor Rehabilitation

ID405. Vivian Mushahwar and Amin Arefadib. Comparison of the Capacity of three Spinal Cord Stimulation Modalities for Locomotor Control: Implications for Restoring Walking after Spinal Cord Injury

NIS12 - Brain-Computer Interface for Stroke Rehabilitation Based on Motor Learning Principles

Chairs: Juan Moreno, Floriana Pichiorri

ID198. Floriana Pichiorri, Emma Colamarino, Jlenia Toppi, Shiva Mohebban, Emanuela Rotondo, Josè Jesùs Hernandez Gloria, Natalie Mrachacz-Kersting and Donatella Mattia. Brain and muscle interplay in lower limb motor recovery: insights for a comprehensive BCI approach for neurorehabilitation

ID199. Jose Jesus Hernandez Gloria, Shreyansh Pathak, Xueyun Xu, Andres Jaramillo Gonzalez, Andrej Savic, Dario Farina and Natalie Mrachacz-Kersting. Influence of Motor Task Complexity on Movement-Related Cortical Potentials for Lower Limb Recovery in BCI-Based Rehabilitation

ID237. Giovanni Corvini, Yoel Alonso-Cadierno, Ivan Ortiz-Garcia, Natalie Mrachacz-Kersting, Adrià Colomé Figueras and Juan Moreno. Exploration of High-Density EMG Metrics for assessing Motor Adaptation in Robot-Assisted Ankle Training

ID134. Diego Marcos-Martínez, Eduardo Santamaría-Vázquez, Víctor Martínez-Cagigal, Kyriaki Kostoglou, Gernot Müller-Putz and Roberto Hornero, Towards Continuous EEG-Based Muscle Activity Estimation via Subject-Adaptive BCIs

Track E - Clinical Translation and Industry Track

Chairs: Zen Koh, Bong-Keun Jung, Jesus Tornero

CTIT03 - A Life-Course, Evidence-Driven Pathway from HealthTech Innovation to Adoption

Chair: Rui Loureiro

ID207. Anne Canning, Michelle Poland, Steve Morgan, John Hunt, Kristen Clements, Andrew Capel, Myra Conway and Ben Coomber. Accelerating the Translation of Rehabilitation Research from the Laboratory Bench to Bedside: A Whole New Period of Discovery Research a UK Perspective From EMERGE

ID264. Vicky Booth, Dan Clark, Pip Logan, Jacqueline Swift, Kimberley Messam, Anna Lion, Kate Frost, Hok Tung Ng and Adejoke Ogunsolu. Patient and Public Involvement and Engagement (PPIE) that Changes Decisions: Inclusion, Equity and Lived-Experience Co-Design

ID283. Rui Loureiro, Alison Wildt, Emma Salt, Lal Russell, Manoj Sivan, Javvad Haider and Miriam Duffy. An Integrated Recovery Science Ecosystem: Research, Innovation and Translation at the National Rehabilitation Centre

CTIT04 - AI and Neurorehabilitation: the regulatory, ethics and education landscape

Chairs: María Amparo Grau Ruiz

ID108. Fiachra O'Brolchain. Neurorehabilitation, AI and Patient Autonomy

ID202. Miriam Rafferty, Courtney Celian, Kristen Hohl and Steven Jackson. Integrating Rehabilitation Technologies into Clinical Practice: An Observational Case Study Applying the Designing for Accelerated Translation of Rehabilitation Technology Framework

ID205. Bruna Franceschini and Txetxu Ausín. Ethics and Rehabilitation Robotics: Shifting Care Contexts

ID399. Arun Jayaraman. Practical Challenges in Integrating Robotic Systems into Existing Clinical Workflows and Reimbursement Models

ID409. Maria Amparo Grau Ruiz. International Legal Foundations to Ensure the Protection of Human Rights when Applying AI to Rehabilitation

Friday, October 2nd				
Time	Track A - Rehabilitation and Wearable Robotics Chairs: Junho Choi, Jiyeon Kang, Denny Oelomo Room A	Track B - AI and Computational Methods for Precision Rehabilitation Chairs: Sang Hoon Kang, Jinsook Roh, Megan K. O'Brien Room B	Track C - Clinical Motor Control Chairs: Dong-Wook Rha, Ghaith Andrews Room C	Track D - Neural Interfaces and Stimulation Chairs: Jonghyun Kim, Thomas Bulea Room D
08:30-09:15		Prof. Ursula Hofstoetter, Plenary Lecture (Room A) Chairs: Denny Oelomo, Junho Choi		
09:15-10:45	RWR02B - From Data to Action: Wearable Sensor Technology to Drive Neurorehabilitation (II) Chair: Megan K. O'Brien	RWR12 - Advances in Lower and Upper Extremity Rehabilitation Robotics for Persons with Mobility Disability Chair: Ghaith J. Andrews	CMC05 - Advances in Technology-Assisted Gait Recovery Chairs: Francesca Lunardini, Juan Moreno	NIS09 - Frontiers in EMG-guided bioengineering to improve neuromotor control in neurorehabilitation Chair: Jinsook Roh
10:45-11:15		Coffee break		
11:15-12:45	RWR13A - Advanced Technologies for 3D Upper-Limb Robotic Rehabilitation: Hardware, Control, and Interaction (I) Chair: Jonghyun Kim	NIS14 - Methods and Techniques in Neural Interfacing and Stimulation Chair: Kyung-In Jang	NIS05 - Implantable BCIs to Restore Neurologic Function and Enhance Neurorecovery Chair: Daniel Rubin	NIS10 - Clinical study on QEEG-guided precision neuromodulation Chair: Seung Wan Kang
12:45-13:45		Lunch break		
13:45-14:30		Prof. Claudio Castellini, Plenary Lecture (Room A) Chairs: Won-Seok Kim, Sangjoon Kim		
14:30-16:00	RWR13B - Advanced Technologies for 3D Upper-Limb Robotic Rehabilitation: Hardware, Control, and Interaction (II) Chair: Hyunsoo Woo	RWR08 - Advances in Exoskeleton and Prosthetic Systems for Human Augmentation and Neuro-Rehabilitation Chair: Younggeol Cho	RWR05B - From Lab to Life: Human Intention and Interaction in Wearable Rehabilitation Robotics (II) Chairs: D.S.V. Bandara, Junpei Arata	
16:00-16:30		Closing Ceremony (Room A)		
				Track E - Clinical Translation and Industry Track Chairs: Zen Koh, Bong-Keun Jung, Jesus Tornero Room E
				NIS13 - Sensory Neuromodulation via Peripheral Stimulation: its Promising Future and Challenges Chair: Hanguk Park
				AICM04 - Decoding Intention: Toward Effective and Personalized Neurorehabilitation through AI and Intelligent Systems Chairs: D.S.V. Bandara, Shingo Shimoda

Track A - Rehabilitation and Wearable Robotics

Chairs: Junho Choi, Ji-Yeon Kang, Denny Oetomo

RWR02B - From Data to Action: Wearable Sensor Technology to Drive Neurorehabilitation (II)

Chair: Megan O'Brien

ID153. Li Guo, Anna Björkquist, Maria Muñoz-Novoa, Margit Alt Murphy and Leif Sandsjö. A co-designed smart textile sEMG biofeedback system for post-stroke hand rehabilitation at home - Preliminary findings

ID272. Fernando Urgiles, Daniel Andrade and Juan Guanuchi. Wearable Low-Cost Inertial System for Lower-Limb Kinematic Monitoring in Post-Stroke Rehabilitation

ID345. Muhammad Umair Ahmad Khan, Mukaram Tariq, Mudassar Lateef, Eshwa-Tul Eman and Daniel O' Toole. GameWrist: An IMU based Wrist Rehabilitation Game with Assistive Joystick for Stroke Patients

ID394. Ludovica Viola, Giada Parodi, Georgii Kurshakov, Arianna Li Noce, Laura Bandini, Cecilia De Vicariis, Vittorio Sanguineti and Viola Biancheri. Real-time pose reconstruction to detect compensatory strategies in robot-assisted stroke rehabilitation

RWR13A - Advanced Technologies for 3D Upper-Limb Robotic Rehabilitation: Hardware, Control, and Interaction (I)

Chair: Jonghyun Kim

ID038. Ho Moon Kim and Dong Min Choi. Design and Development of an Underactuated Hand Exoskeleton for Rehabilitation

ID046. Minki Sin and Jangho Cho. Development of a Lightweight Upper Limb Exoskeleton for Interactive Rehabilitation Training

ID097. Peter Snow, Ruchi Kaul, Nida Mir, Ashna Joshi, Sushma Sagar and Rui Loureiro. Affordable virtual reality sensorimotor robotic intervention for the management of Phantom Limb Pain in below elbow amputees following trauma

ID115. Daehyun Kim and Chowon Park. Structural reserve-guided network biomarkers for predicting upper-limb recovery after stroke: Toward mechanism-informed adaptive robotic rehabilitation

ID164. Sohyun Moon, Taegyun Kim and Jonghyun Kim. Toward a robust game-theoretic control framework for multi-DOF upper-limb rehabilitation robots

RWR13B - Advanced Technologies for 3D Upper-Limb Robotic Rehabilitation: Hardware, Control, and Interaction (II)

Chair: Hyunsoo Woo

ID116. Taegyun Kim, Sohyun Moon and Jonghyun Kim. Generating Human-like Reaching Trajectories using End-Effector Kinematics for Robot-Assisted Rehabilitation

ID193. Michele Canepa, Nicolò Boccardo, Matteo Laffranchi and Claudio Castellini. Interactive Real-Time Incremental Learning System for Prosthetic Control

ID263. Siwoo Kim, Wonseok Shin, Bummo Ahn and Suncheol Kwon. Real-Time Upper-Limb Action Classification Using Multimodal sEMG-IMU Signals

ID273. Junyeop Lee and Jinsoo Kim. Reducing Personalization Time for Exoskeleton Assistance Under Low Signal-to-Noise Ratio Conditions

ID406. Heui-Sub Hyeon and Hyunsoo Woo. Development of a 3-DOF End-Effector Upper-Limb Rehabilitation Robot within an AI-Driven Multimodal Interactive Platform

RWR12 - Advances in Lower and Upper Extremity Rehabilitation Robotics for Persons with Mobility Disability

Chairs: Ghaith J. Androwis

ID304. Yifei Yuan, Erick H. Nunez, Easter S. Suviseshamuthu, Sergei Adamovich, Ghaith J. Androwis and Xianlian Zhou. Sim-to-Real Deployment of a Deep Reinforcement Learning Controller for a Lower-Limb Rehabilitation Exoskeleton

ID372. Gail Forrest, Christopher Cirnigliaro, Erica Garbarini, Pierre Asselin, Steven Knezevic and Ann Spungen. Exoskeleton Controller and Design Considerations Follow-up: Effect on Training Response for Persons with SCI

ID380. Ghaith J. Androwis, Brett Gordon, Juan Ramirez, Sergei Adamovich, Steven Kirshblum and Guang Yue. Effectiveness of Myoelectric Wearable Orthoses for Upper Extremity Function and Rehabilitation in Acute Spinal Cord Injury

ID383. Karen Nolan, Gregory R. Ames, Christina M. Dandola, Corey M. Greene, Katherine M. Broderick, Joshua Breighner and Soha Saleh. Robotic Exoskeleton Gait Training Improves Weight Transfer and Walking Speed in Subacute Stroke

ID403. Karen Nolan, Mohammed I. Huzien, Sharon Franco, Juan J. Ramirez, Courtney Craven, Julie M. Eng and Ghaith J. Androwis. Safety, Feasibility, and Preliminary Efficacy of a Pediatric Robotic Exoskeleton for Cerebral Palsy

RWR08. Advances in Exoskeleton and Prosthetic Systems for Human Augmentation and Neuro-Rehabilitation

Chair: Younggeol Cho

ID188. Byungwook Lee, Kyung-Soo Kim and Younggeol Cho. Spatial-Temporal Feature Learning for Simultaneous Estimation of Finger Flexion and Extension Force

ID282. Dongho Park, Carson Wolff, Mitch Miller and Aaron Young. Visual Biofeedback for Voluntary Modulation of Hip Joint Work Symmetry Using a Tuning-Free Powered Hip Exoskeleton: A Pilot Study

ID301. Seungjun Lee, Junho Choi and Hyunki In. Active Strap for Improved Comfort in Lower-Limb Exoskeletons

ID356. Younggeol Cho, Pranav Mamidanna, Laura Ferrante and Dario Farina. Spatial Representations of Forearm muscle activation for HD-EMG based Control and Assessment: Motor-Unit Localization and Direct Projection

ID367. Yumna Khalid and Sigrid Dupan. Effect of learning and feedback assistance on the sense of agency during myoelectric control

RWR05B - From Lab to Life: Human Intention and Interaction in Wearable Rehabilitation Robotics (II)

Chairs: D.S.V. Bandara, Jumpei Arata

ID101. Juan Fang, Capucine Nicolet, Michael Haldimann and Niklaus Stocker. Generation of Arm Swing Movement Using a Cable-driven Parallel Robotic Platform for Early Rehabilitation

ID262. Minhye Kim, Jaewoo Cho, Hong Min and Jooeun Ahn. Aftereffects of Step Length Asymmetry Induced by a Commercial Hip Exoskeleton

ID265. Byeori Han, Jinkyu Lee and Won-Kyung Song. Home-Based Exosuit Intervention Improves Walking Mobility and Daily Activity in Community-Dwelling Stroke Survivors

ID247. Jumpei Arata, Nobutaka Mukae, Takashi Takebayashi and Hiroshi Kanatani. Exploratory Clinical Application of an EMG-based Motion Intention-Driven Hand Rehabilitation Robot

ID395. Christian Mele, James Tung and Katja Mombaur. Design and Analysis of Controllers for Lower-Limb Exoskeleton Mannequin for Evaluating Interactions at the Coupling Interface

Track B - AI and Computational Methods for Precision Rehabilitation

Chairs: Jinsook Roh, Megan O'Brien

NIS14 - Methods and Techniques in Neural Interfacing and Stimulation

Chair: Kyung-In Jang

ID014. Yun-Sung Lee, Ga-Young Choi, Dong-June Yeo and Han-Jeong Hwang. Task-Based Individualized Transcranial Alternating Current Stimulation for Cognitive Function Improvement Based on Electroencephalography Study

ID138. Irene Reginaldi, Francesca Magni, Mario Spirito, Simone Traverso, Alessandra Pedrocchi and Emilia Ambrosini. Development of a Finite State Machine-Based Iterative Learning Controller for Hybrid FES Gait Assistance

ID171. Yujin Choi, Young Ro Kim, Euiheon Chung and Jiyeon Kang. A kHz Magnetic Stimulation Platform for In Vitro Neuromodulation Studies Based on an Axial-Flux Rotary-Transformer Geometry

ID331. Kyung-In Jang. Mechanics-Guided Bioelectronic Systems: From Structural Design to Clinical Translation

ID338. Min-Ho Seo, Sang-Min Kim, Yoo-Kyum Shin, Seok-Hoon Choi, Hyo-Kyeong Kwon and Seong Hyeok Park. In-situ Formed Micro/Nanostructured Dry Electrode for Long-term Reliable Bioelectrical Sensing and Stimulation in Neurorehabilitation

NIS05 - Implantable BCIs to Restore Neurologic Function and Enhance Neurorecovery

Chair: Daniel Rubin

ID078. Leigh Hochberg. Neuroscience of iBCIs and an Introduction to BrainGate

ID086. Sergey Stavisky and Nicholas Card. High performance speech neuroprostheses

ID098. Kushaal Rao, Henry Jenkins, Jacob Gusman, Maarten Ottenhoff, Ruixiang Li, Alexander Acosta, Lucille Panagos, Andrew Dempsey, Shane Allcroft, Emilia Mann, James Arnold, David Pont-Esteban, Harrison Young, Umut Civici, Connor McCann, Conor Walsh, Daniel Rubin, John Simeral, Carlos Vargas-Irwin and Leigh Hochberg. Controlling Soft Robotic Systems Using an Implantable Brain Computer Interface

ID286. Abidemi Ajiboye, Emily Graczyk and Jennifer Sweet. Neural Interfaces for Sensorimotor Restoration after Tetraplegia

NIS09 - Frontiers in EMG-guided bioengineering to improve neuromotor control in neurorehabilitation

Chair: Jinsook Roh

ID135. Dailyn Despradel, Maxwell Murphy, Luigi Borda and Douglas Weber. Decoding controls for human-computer interaction from motor unit firing rates in people with tetraplegia due to spinal cord injury

ID160. Abed Khorasani, Cynthia Gorski, Jinsook Roh, Ken Paller and Marc Slutzky. Wearable myoelectric interface for neurorehabilitation (MINT)

combined with targeted memory reactivation to reduce abnormal co-activation and improve arm function in people with stroke

ID228. R. James Cotton. Frontiers in EMG-guided bioengineering to improve neuromotor control in neurorehabilitation: Wearable gamified electromyographic biofeedback to improve arm function in people with spinal cord injury

ID319. Supraja Vaidhyathan, Gang Seo, Michael Houston, Manuel Portilla-Jiménez, Jeong-Ho Park, Hangil Lee, Sheng Li, Yingchun Zhang, Hyung-Soon Park and Jinsook Roh. Effects of EMG-Guided New Muscle Coordination Development on Neurophysiological Connectivity in Chronic Stroke: A Pilot Study

NIS10 - Clinical study on QEEG-guided precision neuromodulation

Chair: Seung Wan Kang

ID036. Hsing-Han Wang and Tzung-Chang Tsai. EEG-Based Assessment of rTMS Treatment Response in Disorders of Consciousness

ID050. Haruto Takase, Masaki Fukunaga, Wenwei Yu and Jose Gomez-Tames. A Deep Learning Model for Predicting TMS-Induced MEPs from Brain Electric Field Maps

ID128. Dogeun Park, Jeong-Woo Jang, Minseo Hwangbo and Dong-Ok Won. Modulation of ERP-based BCI Attention Performance through Short-term Respiratory Pattern Control

NIS13 - Sensory Neuromodulation via Peripheral Stimulation: its Promising Future and Challenges

Chair: Hangu Park

ID74. Milica Baljic, Vladimir Kojic, Filip Budimir, Marta Mirkov, Nebojsa Malesevic and Matija Strbac. Screen-printed UV curable hydrogel as skin-electrode interface in hybrid electrodes for EMG recording and electrotactile stimulation

ID191. June Seung Lee, Younsu Jung, Hyejin Park, Sajjan Parajuli, Sagar Shrestha, Gyoujin Cho and Hangu Park. Flexible, MCU-less Roll to Roll Printed Neurostimulator for Wearable Neurorehabilitation

ID305. Jiseung Kang and Hangu Park. Electrotactile Temporal Resolution via a Tactile Gap-in-Noise (tGIN) Paradigm: A Comparison between Fingertip and Tongue Tip

ID308. Hamdi Qraieqa and Hangu Park. Wearable Wristband Stimulator for Motion-Dependent Electrotactile Sensory Feedback

Track C - Clinical Motor Control

Chairs: Dong-Wook Rha, Ghaith Androwis

CMC05 - Advances in Technology-Assisted Gait Recovery

Chairs: Francesca Lunardini, Juan Moreno

ID60. Javier V. Juan, Rubén Martínez, Eduardo Iáñez, Mario Ortiz, Jesús Tornero and Jose M. Azorin. EEG data augmentation with conditional Variational AutoEncoder and Temporal Convolutional Networks for EEG-based pedaling motor imagery decodification

ID147. Dongwon Jeong, Seongsik Oh, Sungjun Jeong and Woojoong Kim. Multimodal Analysis of Sequencing-Dependent Coordination in Instrumented Walker-Assisted Gait

ID150. Agnese Cherubini, Natacha León, Clara Beatriz Sanz-Morère, Elena de Eusebio Rubio, Juan Camilo Moreno, Jesús Tornero and Francesca Lunardini. Robot-assisted gait therapy in post-stroke patients: preliminary evidence linking stable longitudinal assistance settings to greater clinical improvement

ID235. Marica Ferrara, Federica Tamburella, Jlenia Toppi, Floriana Pichiorri, Francesca Patarini, Shiva Mohebban, Giada Serratore, Alessandra Bigioni, Giorgio Scivoletto, Donatella Mattia and Nevio Luigi Tagliamonte. Quantifying Task-Specific Active Patient Participation during Robot-Assisted Gait Training for Spinal Cord Injury

Track D - Neural Interfaces and Stimulation

Chairs: Jong-Hyun Kim, Thomas Bulea

AICM04 - Decoding Intention: Toward Effective and Personalized Neurorehabilitation through AI and Intelligent Systems

Chairs: D.S.V. Bandara, Shingo Shimoda

ID126. Shaikha Alnuaimi, Soha Ahmed, Hamad Al Jassmi and Fady Alnajjar. A Multimodal Large Language Model-Based Framework for Home Monitoring of Emotional Dysregulation: A Feasibility Study

ID181. Edgard J. Barazorda, D.S.V. Bandara and Jumpei Arata. Benchmarking Dynamic Functional Connectivity Methods Toward Adaptive BCI for Robotic Neurorehabilitation

ID206. Isabella Montanaro and Levi Hargrove. Toward Deployable, Robust EMG Pattern Classification: LDA, Deep Learning, and Hybrid Approaches

ID284. Malik Muhammad Naeem Mannan, Alastair R. J. Quinn, Yana Salchak, David G. Lloyd and Claudio Pizzolato. Effects of Training Length and Update Interval on Calibration-Free Adaptive Brain-Computer Interfaces

ID224. Amila Kariyawasam, D.S.V. Bandara and Shunji Kimura. Forearm Mechanical-state Recognition using an SVM-based Wearable Fiber-Optic Sensor

#	Rehabilitation Wearable Robotics (RWR) - Poster presentations		
P-001	186	Ung Heo, Jung Kim and Sangjoon Kim	Evaluating Portable Pneumatic Power Sources for Wearable Robots: Flow Density and Acoustic Noise Comparison RWR01
P-002	343	Chwee Yn Ng, Ashwin Narayan, Cindy Sia Ching Li, Xin Yi Lim, Shuaishuai Han, Haoyong Yu and Poo Lee Ong	Feasibility of a Powered Robotic Shoulder and Proximal Arm Exoskeleton to Assist Activities of Daily Living in Individuals with Neurological Proximal Arm Weakness RWR01
P-003	39	Yekwang Kim, Haeun Lim, Tuan Anh Nguyen, Juhui Moon, Jeyong Jung and Seung-Jong Kim	Deep Learning-Based Prediction of Foot Placement and Lower-Limb Trajectories Using IMU Signals RWR02
P-004	40	Yekwang Kim, Juhui Moon, Haeun Lim, Jeyong Jung and Seung-Jong Kim	Integrated AI System for Gait Bout Recognition and Gait Phase Progression Estimation Using IMU Signals RWR02
P-005	187	Chanyoung Ko and Kyoungchul Kong	Data-Driven Compensation of Human-Robot Misalignment for Human Hip Kinematics Estimation in Wearable Robots RWR02
P-006	189	Chaerin Park, Sangjoon J. Kim, Joo Yong Sim and Youngjin Na	A Wearable Device-Based Respiratory Monitoring System for Analyzing Breathing Patterns in Real Life RWR02
P-007	195	Sungbin Park, Junhui Cho and Jung Kim	Integrated EIM-EMG Sensor System for Lower-Limb Proprioception Estimation and Gait Classification RWR02
P-008	203	Debora Quadrelli, Daniel Gelmini, Nicolò Boccardo, Michele Canepa and Matteo Laffranchi	Preliminary Evaluation of Dry sEMG Electrodes for Prosthetic Interfaces RWR02
P-009	222	Yunseong Bang and Kyungseo Park	A Soft Tactile Interface for Wearable Rehabilitation Robots Using a Multi-Lattice Magnetic Robotic Skin RWR02
P-010	230	Taejeon Kim, Jehyun Yoo, Jun Min Cha, Yoonhwan Kim, Dong-wook Rha and Juntaek Hong	Force-Based Spasticity Assessment Using Wearable pMMG and IMUs: Pre/Post-Botulinum Toxin Injection Case in Pediatric Cerebral Palsy RWR02
P-011	233	Mouhamed Zorkot, Laetitia Wilhelm, Silvestro Micera, Solaiman Shokur and Mohamed Bourl	Wearable Vibrotactile Sensory Feedback for Gait Rehabilitation RWR02
P-012	266	Heewon Choe and Minkyu Je	Multi-Node Wireless EMG Recording System for Motion Recognition RWR02
P-013	378	Juan Barboza, Guillermo Apodaca, Yoel Alonso, Giovanni Corvini, Juan Camilo Moreno and Fernando Brunetti	Real-Time Gait Segmentation Using a Finite State Machine and a Single IMU RWR02
P-014	385	Cameron Nurse and Quentin Sanders	Wearable Haptic Biofeedback During Overground Walking: Influence of Feedback Schedule on Propulsion Modulation RWR02
P-015	67	Jangwhan Ahn and He Huang	Stabilization of Transfemoral Amputee Walking Using Medio-Lateral Hip Exoskeleton: A Pilot Study RWR03
P-016	146	Jaewoo Cho, Minhye Kim, Hong Min and Jooeun Ahn	Effects of Visual Cues and Walking Speed on Balance Recovery from Slip-like Perturbations RWR03
P-017	240	Marica Ferrara, Emma Colamarino, Floriana Pichiorri, Jlenia Toppi, Claudia Vacca, Giulio Nicolò Meldolesi, Donatella Mattia and Nevro Luigi Tagliamonte	Effects of Visual Cues and Walking Speed on Balance Recovery from Slip-like Perturbations RWR03
P-018	254	Arjunram P, Sujith Christopher, Senthilvelkumar T, Varadhan Skm and Sivakumar Balasubramanian	Vision-based Estimation and Validation of Base of Support for Balance Rehabilitation RWR03
P-019	290	Neelakshi Ganguly, Lishwanth Rk, Sriramachandran Venugopal, Jerome Dany, Senthil Velkumar T, Dr. Manish Anand, Dr. Sujatha Srinivasan and Dr. Sivakumar Balasubramanian	An Underactuated 2-DOF Ankle-Toe Rehabilitation Robot for Post-Stroke Foot Function Training RWR03
P-020	165	In Young Choi, Seung Ick Choi, Hui Woo Yang and Nayoung Kim	Early gait rehabilitation with a torque-assisting hip-wearable robot in Parkinson's Disease after acute UTI-related functional deterioration: a case report RWR04
P-021	174	Xin Wang, Xiaoling Yang, Zhe Wang and Xiaoci Wang	From Prototype to Practice: An ICF-Aligned, Life-Course Adoption Pathway for Hip-Assist Exoskeletons RWR04
P-022	249	Parsa Jafarian, Mostafa Kaviri, Wael Suleiman and Guillaume Durandau	New Simulation Framework for the Design of Human-Robot Controllers in Elderly Care RWR04
P-023	314	Murat Sahin, Andrea Ortiz-Cuadros, Giacomo Severini and Donal Holland	Parameter Estimation of a Novel Robot for Lower Limb Rehabilitation Using the Bees Algorithm RWR04
P-024	5	Ana Císnal, Javier Pérez-Turiel and Juan Carlos Fraile	Expert-based Clinical Usability Assessment of the M3Rob Wrist Rehabilitation Robot RWR05

P-025	16	Hanjun Kim and Aaron Young	Mode-unified, Continuous, and Biomimetic Control of Robotic Lower Limb Prostheses	RWR05
P-026	31	Hamah Braun, Silvana Miranda Montenegro, Luca Papi, Chiara Brogi, Marek Sierotowicz, Nicola Secciani and Claudio Castelliini	Real-Time Ultrasound Intent Detection for Hand Exoskeleton Control	RWR05
P-027	132	Merve Ozdas and Matthew Dyson	A Hardware-Efficient Vibrotactile Feedback Strategy based on the Funneling Illusion	RWR05
P-028	163	Jaeyun Kim, Seung Ick Choi, Hui Woo Yang and Nayoung Kim	Torque-assisting hip wearable robot training in a patient with dystonic cerebral palsy: a single-subject study	RWR05
P-029	192	Matilde Puricelli, Elkin Mauricio Echeverri Gomez, David Rodriguez-Cianca and Diego Torricelli	Evaluation of the Effects of Soft Tissue on Human-Exoskeleton Interaction Using a Biomimetic Robotic Limb: A Pilot Study	RWR05
P-030	220	Minki Kim, Jongrak Kim, Hyunmi Lim, Yuna Lee, Hyunji Kim, Eun-Jung Choi, Taenam Kim, Kiwon Lee, Jeonghun Ku, Wonseok Kim and Hyung-Seon Park	Integrated BCI-XR Neurorehabilitation System: EEG-Driven Hybrid Control of Soft Hand-Wrist Wearable Robot with FES	RWR05
P-031	236	Eligia Alfio, Stefano Nuzzo, Sophia Taddei, Louis Flynn, Maria Alejandra Diaz, Tom Verstraeten and Kevin De Pauw	A preliminary study on the effects of varying the timing and magnitude of push-off assistance from an active ankle-foot prosthesis	RWR05
P-032	259	Junhwan Choi, Jiyou Feng, Juhee Park and Jung Kim	A Preliminary Study, Bidirectional sEMG Teleoperation of a Robotic Hand with Real-time Vibrotactile Feedback	RWR05
P-033	274	Eunsik Choi, Sun Mook Choi, Seoyoung Koh and Joosun Ahn	Residual-informed Contact Transition Optimization for Improved Spinal Joint Load Estimation in Lifting Simulations	RWR05
P-034	322	Suyeon Park and Junho Choi	Detection of the intention to change walking speed in transistibial prosthesis users using a disturbance observer	RWR05
P-035	351	Sam Smith, Lydia Harland, Ashlee Gould and Emma Turton	Barriers to completion of robot-assisted gait training sessions in an inpatient public hospital	RWR05
P-036	45	Byung-Woo Ko, Jiyeon Jo and Myung-Joon Lim	Comparative Usability and Immediate Muscular Mechanical Responses of Two Motorized Rehabilitation Devices Applied to the Ankle in Individuals with Chronic Stroke: A Pilot Study	RWR06
P-037	6	Karen Sui Geok Chua, Ravi Shankar, Xiaojia Ge, Emily Yee, Christopher Wee Keong Kuah, Tegan Kate Plunkett, Chwee Yin Ng, Zhen Zhen Chen, Silvana Choo, Bernardo Noronha, Wei Binh Chong, Poo Lee Ong, Kim Huat Goh and Asif Hussain	Telehabilitation Robotics for Upper Limb Rehabilitation after Stroke (TRUST): A Pragmatic Multi-Centre Clinical Trial with Longitudinal Follow-up	RWR07
P-038	43	Shreenandan Sahu, Suraksha Jain and Cassandra Solomons	Digitally Augmented 3x3 Occupational Therapy Pegboard for Objective Cognitive-Motor Task Quantification (COHMET)	RWR07
P-039	61	Fabio Alexander Storm, Roberta Nossa, Eleonora Diella, Riccardo Riboni, Valentina Grasso, Mattia Chiappini, Luca Emanuele Molleni, Anna Falvene, Giorgia Malerba, Roberta Nicotri, Federica Pregnolato, Carolina Ferrante, Annalisa Cotardo, Giada Sgheri, Marco Germanotta, Maria Cristina Mauro, Alessio Fasano, Annalisa Sacco, Maurizio Ferrarin, Anna Cavallini, Sabrina Giovanna Signorini, Giuseppina Sgandurra, Irene Aprile, Laura Iuvone, Angela Cavallagli, Cristina Maghini and Emilia Biffi	Agilit@home: A Randomized Controlled Trial of Home-Based Robotic Gait Training in Children with Cerebral Palsy and Crouch Gait	RWR07
P-040	239	Davide Savona, Sara Spagnuolo Guarente, Eleonora Guanziorli, Franco Molleni, Alessandra Pedrocchi and Emilia Ambrosini	Multidimensional Assessment of a One-Month FES-Cycling Training in Chronic Post-Stroke Individuals	RWR07
P-041	312	Guyeol Jeong, Jungmin Ahn, Gyujiin Cho and Kyu-Jin Cho	Design and Characterization of an Integrated Soft Wearable Platform Providing 3-DOF Wrist and Multi-Digit Assistance	RWR07
P-042	152	Yeo Joon Yun, Chang-won Moon, Ki-Hoon Kim, Tae-Hoon Kim, Bo-Kyung Kim, Dongbin Shin, Hyeoun Jang, Hyuk-Jae Choi and Mi Jung Kim	Effects of Short-Term Powered Gait Orthosis Training on Gait Function in Patients with Neurological Gait Impairment: A Multicenter Pilot Study	RWR08
P-043	178	Brendan Driscoll, Joshua Tacca, Jangwhan Ahn, Austin Mituniewicz and He Huang	Instructive Biofeedback to Support Direct Electromyography Control for Powered Prosthetic Ankle	RWR08
P-044	197	Jun Min Cha, Yoon Hwan Kim, Jehyun Yoo, Taeyeon Kim, Juntaek Hong and Dong-wook Rha	Effects of Hip Exoskeleton Assistance on Gait Kinematics and Spatiotemporal Parameters in Healthy Adults	RWR08
P-045	217	Yoon Hwan Kim, Jun Taek Hong, Je Hyun Yoo, Jun Min Cha, Tae Yeon Kim and Dong-wook Rha	Effects of Hip Exoskeleton Assistance Modes on Plantar Pressure During Walking in Healthy Adults	RWR08

P-046	295	Paolo Gaffurini, Marco Ghidelli, Luciano Bissoletti and Matteo Lancini	Force Patterns in Powered Exoskeleton Users: Longitudinal Monitoring of Upper Limb Loads and Gait Customisation	RWR08
P-047	315	Andrea Berettoni, Simone Traverso, Carlo De Benedictis, Giulia Mariani and Matteo Laffranchi	Biomechanically informed control of a semi-powered knee prosthesis for adaptive steps in stair climbing	RWR08
P-048	335	Morteza Khorabadiar, Zahra Abbasi, Rolf Findeisen, André Seyfarth and Maziar A. Sharbafi	Neuromechanical Signatures of Human-Hip Exoskeleton Interaction: Protocol and Preliminary Observations	RWR08
P-049	388	Mohammadavad Jazini Dorcheh, Yahid Frouzi, Rolf Findeisen and Amir Ahmad Sharbafi	Estimation of Ground Reaction Force in Real-Time for Wearable Robotics Using Temporal Convolutional Networks	RWR08
P-050	180	Gabriele Fassina, Laura Santos, Silvia Annunziata, Michelle Brivio, Anna Cavallini, Emilia Ambrosini and Alessandra Pedrocchi	Robot-Enhanced Imitation Therapy for Autism: Insights from a Randomized Controlled Trial	RWR09
P-051	379	Javier Castilla, Lorenzo Vianello, Matthew Short, Salvador Jiménez, Natacha León, José Luis Pons and Jesús Tórrero	Scalable Distributed Robotic Rehabilitation: Strategies and Constraints	RWR09
P-052	162	Panithuanliu Kamei and Cassandra Solomons	Design and Development of an Electronic Reach Training Device for Post-Stroke Upper Limb Rehabilitation	RWR10
P-053	175	Xin Wang, Xiaojing Yang, Zhe Wang and Xiaoqi Wang	Digitalizing Clinical Touch: A Sensory-Intelligent Tele-Examination Pathway for Remote Onboarding of Hip-Assist Exoskeletons	RWR10
P-054	214	Sungjune Shin, Jongwon Kim, Jimin Youn and Kyoungchul Kong	Thermal-Aware Reinforcement Learning for Safe Sit-to-Stand Assistance in Wearable Robots	RWR10
P-055	242	Irina Zhukova, Maria Matveeva, Natalia Zhukova, Anna Agasheva, Denis Novotny, Stanislav Shaimets and ZaynutdinKhuzha Sayfidinkhuzhaev	Cognitive-Motor Interaction in Parkinson's Disease: Executive Dysfunction and Gait Impairment as Targets for Neurorehabilitation	RWR10
P-056	253	Hyukjin Lee, Heeju Mun, Seon Lim and Ki-Uk Kyung	Assisting Safety for Visually Impaired Dancers with a Haptic Ankle	RWR10
P-057	344	Useok Kim, Jeongwoo Son, Seongil Hwang and Sang Hoon Kang	Polar-Coordinate Internal Model-Based Impedance Control for a 2-Degree-of-Freedom Upper-Limb Rehabilitation Robot	RWR10
P-058	349	Laura Manzetti, Ilaria Fagioli, Lisheng Kuang, Andrea Baldoni, Nicoletta Novato, Sara Grandi, Giulia Lentini, Ilaria Creatini, Elisa Tagliome, Simona Crea and Emilio Trigli	A Serious Game-Based Platform for Hand Rehabilitation	RWR10
P-059	353	Hui Yu Koh, Xun Li, Carol Er, Megan Si En Lau, Pablo Cruz Gonzalez, Ananda Sidarta and Karen Sui Geok Chua	Exploring the Mental Health Dimensions in Stroke Rehabilitation	RWR10
P-060	354	Wooyoung Park and Sukyung Park	Muscle Mass Predicts Metabolic Flexibility During Running: A Continuous Glucose Monitoring Study	RWR10
P-061	299	Tomislav Bacek, Mathieu Berthet, Luca Nastasi, Andreas Luft and Chris Easthope Aival	Convergent Target and Feedback Selection Did Not Yield Convergent Gait Recovery in Two Stroke Participants	RWR11
P-062	327	Kuca Toth, Alexandra Barkóczi, Viktória Tamás, Gergő Orsi, Noémi Kovács and Péter Maróti	The effect of robotic gait training on neuroplasticity in post-stroke patients – systematic review	RWR11
P-063	23	Aras Gsnal, Miguel Gómez-Martínez, Javier Pérez-Turiel and Juan Carlos Fraile	Usability and Feasibility of Markerless Augmented Reality Interaction for Upper-Limb Rehabilitation: A Pilot Study	RWR12
P-064	62	Veronika Hofmann, Simon Eckstein, Urs Schneider and Peter P. Pott	Conceptual Framework for Minimal Motor Actuation and DoF Prioritization in Wearable Rehabilitation Devices	RWR12
P-065	182	Tae Kyung Lee, Dong-wook Rha, Jun-min Cha, Ye Bin Cho, Yoon Whan Kim, Yerm Do and Juntaek Hong	Impact of a Hinged Ankle-Foot Orthosis on Walking Adaptability in Children with Spastic Cerebral Palsy and Equinus Gait	RWR12
P-066	190	HyoJun An and Kyoungchul Kong	Squat Trajectory Generation for Rehabilitation and Workspace Expansion in Individuals with Complete Paraplegia	RWR12
P-067	316	Giulia Mariani, Eleonora Vendrame, Nicolò Boccardo, Matteo Laffranchi, Marianna Sempin and Strahinja Dosen	Vibrotactile Feedback for Virtual Lower Limb Prosthesis Control: A Pilot Study	RWR12
P-068	368	Fabio Egile, Evan Campbell, Alex Pasquali, Davide Bargellini, Roberto Meattini, Erik Scheme and Claudio Castellani	HL-IL VR - Development of a Virtual Reality Setup for Human-in-the-Loop Incremental Learning in Myocontrol	RWR13
P-069	415	Soe Lin Paing and Hyunglae Lee	Effects of Ankle Brace Type on Ankle Joint Stiffness and Stability during Perturbed Walking	LB
P-070	417	Tae Young Noh, Chae Soo Kim, Yu Jin Na, Dong Gee Lee and Joshua Sung H You	Ultra-Lightweight, Wearable Task-Specific Non-invasive Neuromodulation with Robotic Assistance for Shoulder Movement in Chronic Stroke: Proof of Concept	LB
P-071	418	Tae Young Noh, Chae Soo Kim, Yu Jin Na, Dong Gee Lee and Joshua Sung H You	Shoulder robot validation and model-based intelligent adaptive control	LB

P-072	419	Tae Young Noh, Na Young Hwang, Chae Soo Kim, Yu Jin Na, Dong Gee Lee, Han Sung Kim and Joshua Sung H You	Multimodal Evaluation of Multifunctional Indoor Assistive Transfer and Ambulation System (MITAS) Across 5 Tasks: Proof-of-Concept Study	LB
P-073	420	Bong-Keun Jung and Qiaoyi Li	Lower-Limb Exoskeleton Outcomes in Older Adults: Toward a Core Outcome Set for Effectiveness Evaluation	LB
P-074	428	Daniela Utiyama, Andre T. Sugawara and Linamara Batistella	Effects of Pediatric Exoskeleton Training on Functional Walking Capacity in Children with Physical Disabilities: A Case Series	LB
P-075	430	Irene L. Y. Beck, Jasmin Visser, Erik Graumweller, Katherine L. Poggensee, Amy Bellitto and Laura Marchal-Crespo	One Setup Fits All? Human Response to Different Passive Cable-Driven Treadmill Configurations for Post-Stroke Rehabilitation	LB
P-076	433	Amy Bellitto, Alberto Garz�s-Villar, Ileana Ciobanu, Stefano Doronzio, Mihai Berteanu, Francesca Cecchi and Laura Marchal-Crespo	What is Fun? Towards Engaging Games for Robotic Hand Rehabilitation After Stroke: A Participatory Study	LB
P-077	435	Jeong-eun Baek, Jung-Ah Lee, Myung-Joon Lim and Won-Kyung Song	Exploring the Usability of the Dynamic Arm Support MOMO During an Eating Task in Individuals With Stroke	LB
P-078	436	Ghailth J. Andrews, Brett Gordon, Steven Kirstblum, Guang H. Yue, and John DeLuca	Preliminary Effects of Self-Balancing Robotic Exoskeleton Gait Training on Mobility in Multiple Sclerosis	LB
AI and Computational Methods for Precision Rehabilitation (AICM) - Poster presentations				
P-079	20	Matteo Antonino Caruso, Yoel Alonso Caderno, Giovanni Corvini, Adri� Colom� Figueiras and Juan Moreno Sastoque	Black-box Bayesian Optimization for FES-cycling Parameters: A Pilot Study	AICM01
P-080	41	Yekwang Kim, Jeyong Jung, Juhui Moon, Haeun Lim and Seung-Jong Kim	Single RGB Camera-Based Exercise Evaluation Using Refined 3D Pose Estimation and Siamese Neural Networks	AICM01
P-081	256	Cyrille Mwomo, Mohamed Elgendy and Chris Easthope Avai	Epistemic Uncertainty as a Driver of Performance in Wearable Monitoring of Parkinson's Disease: A Real-World Proof-of-Concept Study	AICM01
P-082	325	Parvathy Neelakandan, Divakar Bk Reddy, Prabhakar A.T., Sanjith Aaron, Shaikh Atif Iqbalahmed, Varadhan Skm and Sivakumar Balasubramanian	Detecting Daily-Life Activities with Wrist-worn Inertial Measurement Units in Healthy and Persons with Stroke	AICM01
P-083	363	Woojin Kwon and Daekyum Kim	Robust Self-Supervised Representation Learning for Wearable-Based Cardiorespiratory Fitness Estimation	AICM01
P-084	99	Hajar Boulehdid, Cristina Montero-Pardo, Pablo Lanillos, Jorge A. G�mez-Garc�a and Filipe Oliveira-Barroso	LSTM neural networks can accurately predict essential tremor signals from accelerometers	AICM02
P-085	137	PooLee Ong, Huting Zhuo, Khin Chaw Yu Aung, Xin Yi Lim, Ramanpreet Pahwa and Benjamin Leong	SMART-GAIT: Virtual Reality-Based Gait Analysis System for Stroke Rehabilitation - A Feasibility Study	AICM02
P-086	184	Ada Grecher, Alistair McConnell and Maria Vallejo	Refining Prosthetic Usability: Data Augmentation and Group Cluster Analysis in Low-Resolution sEMG Classifiers	AICM02
P-087	201	Mohammad Youssefi, Gunhee Lee and Kyoungchul Kong	Physics-Aware Diffusion-Based Controllable Human Gait Generation	AICM02
P-088	260	Jongwon Kim and Kyoungchul Kong	A Cerebellar-Inspired Execution Layer for Payload-Adaptive Manipulation on Lightweight Robots	AICM02
P-089	359	R�ka Kiss and Mik�s Koller	First Steps Toward Building a Physiologically Realistic Lower Arm Model to Study and Optimize Near-Infrared Spectroscopy Measurements	AICM02
P-090	396	Aron Boldizs�r Koves, R�ka Kiss, S�ndor Foldi and Mik�s Koller	Multimodal EMG-NIRS Characterization of Local Muscle Fatigue	AICM02
P-091	397	Shayan Taheri and Ivan Vujaklija	Towards Optimal, Realistic, and Robust Sit-to-Stand Motion Synthesis for Controller Design	AICM02
P-092	120	Aron Boldizs�r Koves and Mik�s Koller	Comparative Evaluation of Synthetic Mixing Strategies for Multi-Finger EMG Augmentation	AICM04
P-093	156	Luca Nastasi, Mathieu Berthet, Olivia Ruggaber and Chris Easthope Avai	Auto-Selection of Marker-Based Gait Event Detection for Treadmill Walking in Older Adults, Parkinson's Disease, and Stroke	AICM04
P-094	216	Muhammad Unair, Qi An, Fatima Ismail, Shingo Shimoda and Fady Alhajjar	Intention-Contingent Plantar Sensory Feedback for Personalized Neurorehabilitation: A Conceptual Framework Bridging Evidence from Stroke, Aging, and Cerebral Palsy	AICM04
P-095	244	Anders Lindemark, Farshad Moradi, Corentin Prozin and Hoda Fares	Beyond convolutional limits: Comparing spiking and conventional architectures for real-time sEMG regression	AICM04
P-096	374	Seulki Kyeong	Cross-Subject Wearable EMG Direction Decoding with Rapid User Calibration	AICM04
P-097	68	Laura Angioletti, Benedetta Vignati and Michela Balconi	Neurocognitive assessment of EFs and EEG markers of cognitive complexity during praxis tasks: which relationship?	AICM05

P-098	73	Jonas Große Sundrup, Knut Schnell and Katja Mombaur	Monitoring motor activity for improving therapeutic outcome of outpatient treatment for major depressive disorder	AICM05
P-099	76	Eleonora Guanzirelli, Caterina Piazza, Federica Leatelli, Nicolae-Diana; Argio Bolchini and Franco Molteni	Automatic medication and functional effects of artificial natural-light stimulation on post-stroke survivors	AICM06
P-100	79	Mario Ortiz, Vicente Quiles, Carlo Cavaliere, Cristina Polo-Hortiguella, Yash Bhamhani, Eduardo Iáñez and José M. Azorín	Closed-loop control of a cycle-ergometer using a BMI based on motor imagery and cognitive motor engagement for SCI patients	AICM05
P-101	143	Ju Hee Kim, Hyun Jong Lee and Young-Hyeon Bae	Feasibility and Preliminary Effects of a Digital-Based Cognitive-Physical Dual Task Training Program for Community-Dwelling Individuals with Chronic Stroke	AICM05
P-102	333	Giorgia Gatto, Adriano Scibilia, Marco Cairmi and Matteo Lancini	Ecological protocol for assessing motor, cognitive, and attentional function in post-stroke patients	AICM05
P-103	358	Dhushintha Ramalingam, Tomislav Bacek, Ying Tan and Denny Oetomo	A PCA-Based Framework for Identifying Altered Components in Individual Gait Using Kinematic Synergies: A Case Study	AICM05
P-104	389	Ludovica Viola, Stefano Giuseppe Doronzio, Angela Maria Politi, Tommaso La Russa, Tommaso Ciapetti, Laura Bandini, Cecilia De Vicaris, Francesca Cecchi and Vittorio Sanguineti	Modeling direction-dependent motor impairment during robot-assisted stroke rehabilitation	AICM05
P-105	77	Anahis Casanova Hernández, Nuria González Franco, Andres Ubeda Castellanos and Carlos Alberto Jara Bravo	Towards Fatigue-Aware Rehabilitation: sEMG-Based Muscle Fatigue Characterization in Resistance-Based Robotic Therapy	AICM06
P-106	145	Giulia Savina, Ciaran McGeady, Agnese Grison, Emma Colamarino, Jlenia Toppi, Donatella Mattia and Dario Farina	A simulation study to identify most reliable corticomuscular connectivity estimators under continuous and bursting beta activity	AICM06
P-107	257	Junghun Sung, Worjin Jang, Hongki Kang and Byung-Mo Oh	Investigation of Intramuscular EMG Reconstruction from High-Density Surface EMG Using Deep Learning	AICM06
P-108	278	Ricardo Romero, Diego Torricelli, Giacomo Severini and Diego Galeano	Effects of Missing EMG Channels on Muscle Synergy Analysis	AICM06
P-109	294	Jin Yan, Anbang Wang, Nan Liang and Chuanxin Niu	A Computational Investigation of the Antispastic Mechanism of the C3–C4 Proximal Circuitry	AICM06
P-110	35	Mohammad Sadeqh Ghahayani, Hannah Braun and Claudio Castellini	Towards Posture-Invariant Myoelectric Control via Cross-Modal Wavelet-Transformer Fusion	AICM07
P-111	238	Beomsoo Shin and Seungbum Koo	Simulation of Knee Contact and Ligament Force Changes During Running Following ACL and ALL Reconstruction	AICM07
P-112	352	Nicole Giannolto, Silvestro Micera and Simone Romeni	Sensitivity of muscle activations estimated with musculoskeletal models to algorithmic and musculotendon parameter variations	AICM07
P-113	422	Kai Yang, Haoyuan Sun, Hiroyuki Hamada, Ken Kikuchi, Atsushi Yamashita, Diego Torricelli and Qi An	Preserving Clinically Relevant Gait Features in Wearable-Sensor Pose Estimation for Parkinson's Disease	LB
P-114	424	Miklovana Tuci, Armin Curt, Marc Bolliger and Catherine Juzelel	Federated Learning for Multicenter Prediction of Motor Recovery After Spinal Cord Injury	LB
P-115	426	Xiaochen Zhang and Sigrid Dupan	A co-adaptive myoelectric control interface integrating discrete reaching and continuous tracking for pre-prosthetic training	LB
P-116	427	Leon Kutoš, Matej Kramberger, Miloš Kalc, Dario Farina and Aleš Holobar	Motor Unit Merging Underlies the Relationship Between Pulse-to-Noise Ratio and Motor Unit Identification Accuracy in High-Density Surface EMG Decomposition	LB
Clinical Motor Control (CMC) - Poster presentations				
P-117	90	Lucia Angelini, Paola Scanino, Stefano Revello, Enzo Mastinu and Marco Controzzi	Do Kinesthetic and Acoustic Feedback Influence Performance in Fragile Object Manipulation? An Experimental Protocol	CMC01
P-118	267	Qinlin He, Qing Xie and Jixian Wang	Low-Intensity Transcranial Ultrasound Stimulation Regulates Post-Stroke Neuroplasticity: A Study Using Multidimensional EEG Features	CMC01
P-119	52	Kyohei Mikami, Hiroyuki Hamada, Ken Kikuchi, Ryoma Aoki, Takuya Iwamoto, Keisuke Shirashi, Natsumi Takahashi, Akika Yoshimoto, Kazuki Yoshida, Atsushi Yamashita and Qi An	Effects of Plantar Somatosensory Input on Subjective Postural Vertical in Patients with Parkinson's Disease: A preliminary study	CMC02
P-120	69	Elisa Soldi, Laura Bonzano, Ambra Bisio, Marco Santello and Marco Bove	Data-driven model of effects of proprioceptive stimulation predicts perceived hand position	CMC02
P-121	70	Laura Bonzano, Monica Biggio, Alice Massa, Elisa Soldi, Costanza Iester, Ambra Bisio and Marco Bove	Enhanced Fronto-Parietal Cortical Activation During Motor Initiation in Proprioceptive-Augmented Virtual Reality	CMC02

P-122	125	Eleonora Vendrame, Inés Velasco, Dario Di Domenico, Nicolò Boccardo, Matteo Laffrachi and Strahinja Dosen	Perceptual Scalability of High-Density Vibrotactile Feedback for Conveying Distributed Contact in Upper-Limb Prosthetics	CMC02
P-123	309	Sua Bae, Jiseung Kang and Hange Park	Detection System Feasibility of Detecting Electrically Induced SSSEPs Using an OpenBCI EEG	CMC02
P-124	148	Giulia Maria Castiglioni, Sara Ariati, Nicole Sanna, Tania Olmo-Fajardo, Eleonora Guanzirio, Franco Molteni and Emilia Ambrosini	Design and Validation of a Virtual Reality Environment for Post-Stroke Cycling Rehabilitation	CMC03
P-125	336	Keerthana Deepi Karunakaran, Christian Sanchez, Bryan M. White and Kiran Karunakaran	Identifying Markers of Gait and Balance Function in TBI using Resting-State Functional Near Infrared Spectroscopy	CMC04
P-126	58	Davide Crivelli and Michela Balconi	A wearable neurofeedback-virtual reality training for self-regulation: a pilot study on usability, neurophysiological correlates, and subjective experience	CMC06
P-127	109	Jui-Te Lin	Fear of Falling: Altered neuromuscular strategies of turning in high-functioning older adults	CMC06
P-128	227	Rithvika Choudhuri, Earnest Rajapandian, Senthil Velkumar T. Steffi Graffi, Benny Paul Wilson, Atif Shaikh, Manish Anand, Sujatha Srinivasan and Sivakumar Balasubramanian	What is 'normal balance' in healthy human adults in India	CMC06
P-129	243	Franческа Sofia, Pablo Martín Sierra, Sanaz Attaripour, María Guadalupe Quintero Toro, Vicky Chan, Claire Henschcliffe, David J. Reinkensmeyer and Diego Torricelli	Force-derived Tapping Dynamics Discriminate Parkinson's Disease: A Pilot Study using a Home Rehabilitation Device	CMC06
P-130	258	Thomas Legrand and Giacomo Severini	Relationship Between Postural Sway Complexity and Cortico-Kinematic Coherence	CMC06
P-131	302	Elisa Maria Fiorno, Silvia Conforto, Flavia Forconi, Maurizio Schmid and Simone Ranaldi	Modular motor control of the upper limb during goal directed and undirected tasks	CMC06
P-132	303	Mehran Barari, Daniele Bibbo, Silvia Conforto, Ilenia De Meis, Maurizio Schmid and Simone Ranaldi	Effects of external stimuli on the Temporal Characteristics of the Anticipatory Postural Adjustment in Upper-Limb Tasks	CMC06
P-133	323	Charles Jeparaj, Monisha Yuvaraj, Steffi Graff, Sanjith Aaron, Appaswamy Thirumal Prabhakar, Henry Prakash, Samuel Kamaleesh Kumar Selvaraj, Nebojsa Malesevic, Christian Antfolk, Varadhan SKM and Sivakumar Balasubramanian	Effect of unilateral/bilateral intention and direct/mirror vision feedback on wrist/hand muscle activation after stroke	CMC06
P-134	393	Ibrahim Refai, Gregory Pearcey and Kevin Power	Afferent Modulation of Corticospinal Excitability: A Time-Domain & Locomotor Investigation	CMC06
P-135	398	Tim Szuburis, Susanne Blex, Tobias Glasnachers and Ioannis Iossifidis	Modelling upper-limb task-space motion trajectories via elliptic paths and dynamical-system-generated velocity profiles	CMC06
P-136	413	Rukiye Aydin, Hiroyuki Hamada, Ken Kikuchi, Shingo Shimoda, Yoshihiro Kameyama, Kazunori Sato, Daki Kaniyama, Eriko Kishihara, Atsushi Yamashta, Tomokazu Shimada, Genko Oyama, Toshiyuki Fujiwara, Nobutaka Hattoni and Qi An	L-dopa Restores the Bimodal Stance Force Profile in Parkinson's Disease While Increasing Push-Off Variability	LB
P-137	423	Thanuja Jinadasa	Systematic Development of Mindful Swallowing Training for the Rehabilitation of Post-Stroke Dysphagia	LB
P-138	425	Hyun Choi, Dong-A Kim, Jae-Hyuk Bae, Jin-ju Kim and Jung-ah Lee	Age-Related Differences in Phase-Specific Reaction Time of Accelerator Release and Braking in Drivers	LB
Neural Interfaces and Stimulation (NIS) - Poster presentations				
P-139	306	Junhyuk Jung, Hansung Bae and Hange Park	High-Gamma Band IACS Enhances Locomotor Adaptation of Split-Belt Treadmill Walking	NIS01
P-140	340	Fernanda Moura Vargas Dias, Christian Nogueira de Barros, Felipe Mendes Barcelos Angeli, Carolina Florin Antioque Comarela and Fernando Zanela da Silva Areas	Feasibility, Safety, and Preliminary Outcomes of a Combined TMS and Mindfulness Intervention for Migraine	NIS01
P-141	357	Seonyoung Hyun, Jeungeun Kim, Younghee Seo, Joon Bum Park, Wonhye Lee and Hyungmin Kim	Contralateral tFUS Promotes Post-Stroke Recovery by Balancing Interhemispheric Activity	NIS01
P-142	219	Hyek-Jun Kwon and Hyung-Soon Park	Session-by-Session EMG and Force Changes During Muscle Synergy Rehabilitation with EMG in a Stroke Survivor	NIS02
P-143	88	Yinshen Huang, Liumi Qin, Hui Wang and Yanjuan Geng	Peripherally Applied LIFUS Induces Distinct Cerebral Hemodynamics from Electrodeless Stimulation: a NIRS study	NIS03

P-144	83	Xin Yu, Nicole Veit and Arun Jayaraman	Acute Modulation of Muscle Synergies Toward Normative Patterns During Spinal Cord Stimulation in Post-Stroke Gait	NIS04
P-145	44	Jose Gomez Tames	Numerical Evidence Supporting Trans-Spinal Focused Ultrasound for Human Applications	NIS06
P-146	320	Inane Ben M'Riad, Daniele Eneidoli, Filippo Gasperotti, Federico Colombo, Julia Lombardi, Filippo Agnesi, Luigi Albano, Sandro Iannaccone, Pietro Mortini, Silvestro Micera, Alcimar Barbosa Soares, Mohamed Bouri and Solaiman Shokur	A virtual reality system for training center-out reaching tasks during epidural electrical stimulation in spinal cord injury	NIS06
P-147	9	Sonia Rocio Moreno-Castellblanco, Mauro Callejas-Cuervo, Manuel Andrés Vélez-Guerrero and Andrea Catherine Alarcon-Aldana	An EEG Architecture for Motor Intention Recognition: Acquisition, Filtering and Spectral Analysis	NIS07
P-148	24	Carolina Florin Anhoque, Fernando Bermudes Cabral, Sheila da Luz Schneider, Fernanda Moura Vargas Dias, Fernando Aréas and Teodiano Freire Bastos Filho	Feasibility of Repetitive Transcranial Magnetic Stimulation in Post-Stroke Dysphagia: Study Protocol	NIS07
P-149	296	Edwin Daniel Oña, Andrés F. Cela, Beatriz Samitier, Lluís Guirao Cano and Alberto Jardon Huete	Promoting Handgrip Strength and Coordination using exLamar and Exergames with Dynamic Difficulty Adjustments	NIS07
P-150	32	Hyunmi Lim and Jeonghun Ku	Augmented Reality-Based Mirror Therapy Combined with Peripheral Electrical Stimulation Enhances Mu Rhythm Suppression	NIS08
P-151	47	Yoshiaki Soma, Kanata Yatsuda, Manabu Tamura, Wenwei Yu and Jose Gomez-Tames	Preliminary Study of Nerve Conduction Block in Temporal Interferential Stimulation	NIS08
P-152	89	Liunt Qin, Yinshen Huang, Yanjuan Geng, Hui Wang and Jin Xie	Spatial Specificity of Peripheral Microvascular Under Sensory and Motor Transcutaneous Electrical Nerve Stimulation	NIS08
P-153	102	Ekaterina Potapkina, Maria Volodina and Alexei Ossadtchi	Tactile Sensitivity Training in the Active Touch Paradigm	NIS08
P-154	105	Austin Lui, Allison Watt, Ivan Isakov, Lisa Zaidell, Katya Mileva, Marco Davare and Ulrike Hammerbeck	The usability and acceptability of combining virtual reality with electrical muscle stimulation for stroke survivors with varying severity of upper limb impairment	NIS08
P-155	225	Trini Ojakaar, Nicholas Shackle, Aniktha Rajaram, Teresa Simoes Steyn, Charlotte Gardhouse, Andrew Sharott, Anna A V. Guttesen and Melanie K. Fleming	Investigating the Effects of Closed-Loop Auditory Stimulation During Sleep in Older Adults	NIS11
P-156	347	Hyeonjin Jang, Tae-Woo Kim, Yeun Jie Yoo, Donghyeon Kim, Taejeong Kim, Danbi Song, Hyungtaek Kim, Eun-Gyoung Yi and Sangtae Ann	Optimized Transcranial Direct Current Stimulation Improves Upper Extremity Function in Stroke Rehabilitation	NIS11
P-157	307	Sae Min Kim, June Seung Lee and Hangeuk Park	Visual Manipulation of Finger Length Alters Physiological Responses Associated with Body Image	NIS13
P-158	366	Minju Oh, Junha Cho and Hangeuk Park	VIPER: Visuo-Proprioceptive Individual Profiling for Evaluating Rehabilitation Capability	NIS13
P-159	21	Yoel Alonso-Cadernio, Tania Olmo-Fajardo, Clara Beatriz Sanz-Morère and Juan Camilo Moreno	Personalization of functional electrical stimulation (FES) patterns for cycling from muscle synergies: a feasibility study	NIS14
P-160	140	Irina Mikheyeva, Maria Nikolaeva, Milana Makarova, Anastasia Molodanova and Maria Volodina	THE INFLUENCE OF MENSTRUAL CYCLE PHASE ON MOTOR CORTICAL REPRESENTATION PARAMETERS: A TMS-BASED STUDY DESIGN	NIS14
P-161	279	Teresa J. Simoes Steyn, Anna A V. Guttesen, Matthew Weightman, Robert Toth, Iris Weichert, Katrin Schruers, Simran Dhinsa, Laura Cini, Joram J. van Rheede and Melanie K. Fleming	Closed-Loop Transcranial Electrical Stimulation Targeting Slow-Wave Sleep for Memory Consolidation: A Pilot Study in Healthy Young Adults	NIS14
P-162	318	Yuki Ueda, Masaki Fukunaga, Wenwei Yu and Jose Gomez-Tames	Brain Function Localization Using Transcranial Magnetic Stimulation Considering Neural Firing Thresholds	NIS14
P-163	339	Anna Rusinova, Ekaterina Potapkina, Alexei Ossadtchi and Maria Volodina	Effects of Short-Term Cardiac Biofeedback-Based Interceptive Training on Neural Responses to Socio-Emotional Stimuli	NIS14
P-164	411	Woosang Cho, Sebastian Sieghartsleitner, Rupert Ortner, Christy Li and Christoph Guger	Closed-Loop BCI-FES Training in Parkinson's Disease: A Feasibility Study	LB
P-165	421	Fabiano Moura Dias, Vitória Caroline Reinoso de Almeida, Layza Julhila do Nascimento Moura, Carolina Florin Anhoque, Fernando Zanela da Silva Áreas and Fernanda Moura Vargas Dias	Neuromodulation for the Treatment of Women with Menstrual Migraine: a Pilot Study	LB
P-166	429	Sera Bostan, Risha DeGama, Rowan Boyles, Jumeil Kashiwakura, Patrick Sagastegui, Paul H Strutton and Daro Farina	Motor Cortical Excitability Effects of Movement-Related Vibration Stimulation Through a Wearable Armband Device	LB
P-167	432	Daniela Uchiyama, Thaila Bartolo, Daniel Coelho, Andre T. Sugawara and Linamara Batistella	Cortical Activation During Exoskeleton-Assisted Walking in a Patient with Spinal Cord Injury: A Functional Near-Infrared Spectroscopy Study	LB

P-168	434	Seongmi Song and Andrew D. Nordin	Functional Cortico-Muscular Synergies During Assisted Gait	LB
P-180	56	Jinwoong Jeong, Yongwoo Kim, Minseok Kang, Heejun Youn, Jaew Park, Youngjun Cho, Jumin Hwang, Changsik John Pak, Soonchul Kwon and Sanghoon Lee	Restorative Microneedle Muscle Interfaces for Robust EMG Recording and Intention Decoding in Lower Limb Amputees	NIS09
Industry Track (CTIT) - Poster presentations				
P-169	251	Tomokazu Abe, Satsuki Yamauchi, James Vincent Curley, Shotaro Okajima, Riku Kawabata, Shima Okada, Shingo Shimoda and Hitoshi Hirata	Neural Correlates of Immersive Projection Mapping Experience: EEG Microstate and Amygdala Activation Analysis	CTIT01
P-170	124	Marta Mirkov, Marija Stibac and Ivan Vujaklija	Towards minimal sensor setups and calibration protocols for Smart Mechatronic Ankle-Foot Orthoses control	CTIT02
P-171	360	Madalina Moscu, Milos Kostic and Ivan Vujaklija	Sequence-Aware Feature Fusion Improves Ankle-Angle Estimation Robustness in Smart Ankle-Foot Orthoses Applications	CTIT02
P-172	268	Cinzia Amici, Riccardo Buraschi, Mihai Dragusanu, Massimiliano Gobbo, Silvia Logozzo, Monica Malvezzi, Joel Pollet, Monica Tiboni and Maria Cristina Valigi	Robotic Hand Rehabilitation: Device Architectures and User-Centered Design Methodologies	CTIT04
P-173	4	Alejandro Sánchez, Estefanía Morcillo, Cristina Laina and Laura Jaimez	What Is Not Asked Is Not Addressed: The Gap Between Sexual Needs and Professional Intervention After Neurological Damage	CTIT05
P-174	8	Jongmoon Kim	Multifocal motor neuropathy: A case report	CTIT05
P-175	373	Carla Mei Barundia, Daniel Senillo, Anna Purisma Pefalosa, Maria Corazon Cabadquit and Gerardo Briones Jr.	AHMC Early Rehabilitation Program for Patients Diagnosed with Cerebrovascular Disease in the Intensive Care Units	CTIT05
P-176	410	Sang Yeon Cho, Seung Won Lee, Yeonsun Yu and Hwi-Yeon Cho	Modifier Gene Therapy Strategy for Functional Recovery in Hereditary Spastic Paraplegia: Transcriptomic and Real-World Evidence	LB
P-177	414	Fabio Alexander Storm, Mattia Chiappini, Roberta Nossa, Naomi Gefen, Marta Arleo, Pim P. Valentijn, Olqac Ergeneman, Conrad McCarthy, Francesca Fedeli, Patrice L. Weiss and Enilia Biffi	Closer Care for Children: Co-design of services for home and community-based rehabilitation	LB
P-178	416	Su Been Kim, Mi Yu, In Gyun Jeong, Seung Rok Kang, Gi Wook Kim, Myoung Hwan Ko and Tae Kyu Kwon	Evaluation of a Newly Developed QPST System Through Age-Related Thermal Sensory Profiling in Healthy Adults	LB
P-179	431	Nigara Verkhoyayeva	Toward Personalized Neurorehabilitation in Complex Epilepsy: Phenotype-Guided Genomic Triage in a Real-World Cohort	LB

ICNR2026 GENERAL INFORMATION

ICNR2026 Venue: Swiss Grand Hotel, Seoul, South Korea

353 Yeonhui-ro, Seodaemun-gu, Seoul, 03650, South Korea

Tel: +82-2-3216-5656



Since its opening in 1988, the Swiss Grand Hotel has been loved as a “rest area in the city” and “a window of leisurely business.” The Swiss Grand Hotel has 396 main rooms, a grand suite that exclusively has been leading the service residence culture in Korea, a variety of restaurants and bars for gourmet delights, and an exceptionally large scale convention center with state-of-the-art facilities.

Conference Transportation

Airport Limousine Bus No. 6005 (Incheon International Airport ↔ Swiss Grand Hotel)

- **Bus Ticketing Offices**

- Indoor Ticket Booths
 - Ticket Booth No. 21 near Gate No. 4, 1st Floor of T1
 - Ticket Booth No. 48 near Gate No. 9, 1st Floor of T1
- Outdoor Ticket Booths
 - In front of Gate Nos. 4, 6, 7, 8, 11 and 13, 1st Floor of T1

- **Ticket Booth Hours of Operation**

- Indoor: 6:00 AM – 10:00 PM (minimum)
- Outdoor: 6:00 AM – 10:00 PM (minimum)
 - The outdoor ticket booth at Gate No. 8 remains open until 10:40 PM.

- **Fare Adults:** 17,000 KRW / Children (Ages 6–12): 12,000 KRW (Cash or transportation card accepted; no online reservation available)

- **Timetables & Boarding Locations**

- Incheon Airport Terminal 2: B1F, No.28
- Incheon Airport Terminal 1: 5B-3
- Operation hours and routes may be subject to changes due to road, traffic, or weather conditions

Additional Information

Name Badges

Your name badge serves as your admission ticket to all conference sessions, workshops, and coffee breaks. Please wear it at all times. Separate vouchers (tickets) for lunches, the social program, the Conference Banquet, and the Lab Tour will be distributed according to your registration options.

Registration and Information Desk Hours

If you need assistance during the conference, please visit the Registration and Information Desk, located on the 4th Floor of the Convention Centre, Swiss Grand Hotel. Hours are:

September 29th - October 1st, 2026 (Tuesday-Thursday): 08:00-20:00

October 2nd, 2026 (Friday): 08:00-18:00

Presentation Format and Timing

Oral presentations will be organized into sessions with 3, 4, 5 or 6 presentations. The time allocated to each presentation depends on the session format:

Session	Presentation	Q&A	Total allocated time
6 presentations	12 minutes	2–3 minutes	14–15 minutes
5 presentations	15 minutes	2–3 minutes	17–18 minutes
4 presentations	18 minutes	3–4 minutes	21–22 minutes
3 presentations	25 minutes	5 minutes	30 minutes

Please plan your presentation carefully so that you do not exceed the allocated presentation time. Session chairs will be responsible for keeping the sessions on schedule and may need to interrupt presentations that run beyond their allotted time.

Questions and Discussion

Each presentation will be followed by a brief period for questions and discussion. The time available for Q&A depends on the session format, as indicated above.

Presenters are encouraged to leave sufficient time for discussion and to conclude their presentation promptly when their allocated presentation time has ended.

Presentation Equipment

The following basic presentation equipment will be available in the conference rooms:

- Computer
- Projector/screen
- Laser pointer

Presenters may also choose to use their own computer for their presentation. If you plan to use your own computer, please bring any necessary HDMI adapters or other connectors required to connect your device to the conference room audiovisual system.

We require that presenters test their presentation and connection before their session.

Coordination with Session Chairs

Presenters are encouraged to get in touch with their session chair(s) in advance of the conference if they have specific questions or requirements concerning their presentation or the organization of their session.

Session chairs may provide additional instructions regarding the format of the session, presentation order, timing, discussion, or other session-specific arrangements.

The name(s) of the session chair(s) and the final session details is provided in the ICNR2026 scientific program.

Preparing Your Presentation

Please ensure that your presentation is prepared in a format compatible with standard presentation software and that all videos, animations, fonts, and other embedded elements have been tested in advance.

We recommend keeping a backup copy of your presentation readily available, either on a USB drive or accessible through your own computer.

Above all, please respect the allocated presentation time. Keeping presentations on schedule is essential to ensure that all speakers have the opportunity to present their work and that attendees can participate fully in the scientific program.

We look forward to your presentation and to an exciting and engaging ICNR2026 scientific program.

Poster information

Posters will be displayed for the full duration of ICNR2026, with an extended Exhibition and Poster Session on Thursday, October 01, 2026.

Poster Guidelines:

- Maximum width: 90 cm
- Maximum height: 150 cm
- Poster orientation is portrait/vertical orientation
- Authors are free to create their own poster design.

Poster presenters must make their own arrangements to print and bring their posters to the venue; we do not have poster printing services and posters should not be shipped to the venue.

Fixation material will be provided on site.

Details regarding assigned poster slots and poster locations for each track will be posted later. Poster presenters must set up and remove their posters during the following times:

Poster Set-up:

- Tuesday, September 29 | 18:00-19:00 KST
- Wednesday, September 30 | 08:00-08:30 KST
- The poster panel vendor will be setting up the poster panels from 16:00 to 18:00 KST on Tuesday, September 29.

Coffee Break Poster Browsing:

- Poster presenters are welcome to stand at their poster during the coffee breaks, but are not required to.
- Wednesday, September 30 | 10:45-11:15 and 16:00-16:30 KST
- Thursday, October 01 | 10:45-11:15 KST
- Friday, October 02 | 10:45-11:15 KST

Extended Exhibition and Poster Session:

- Poster presenters should stand at their poster for the duration of the Poster Session.
- Thursday, October 01 | 16:30-19:00 KST

Poster Removal:

- Friday, October 02 | Until 16:00 KST
- The poster panel vendor will be breaking down the poster panels starting at 16:00 KST

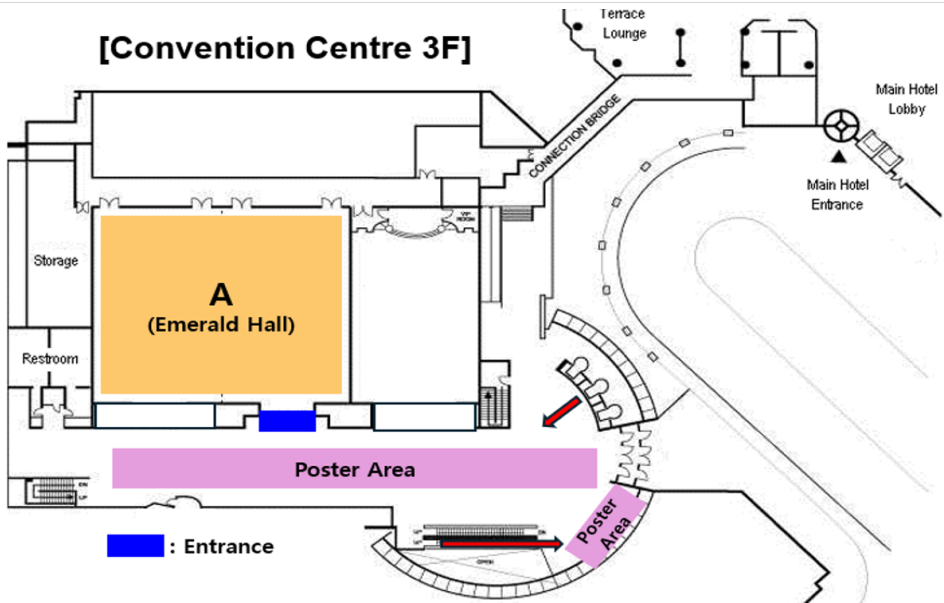
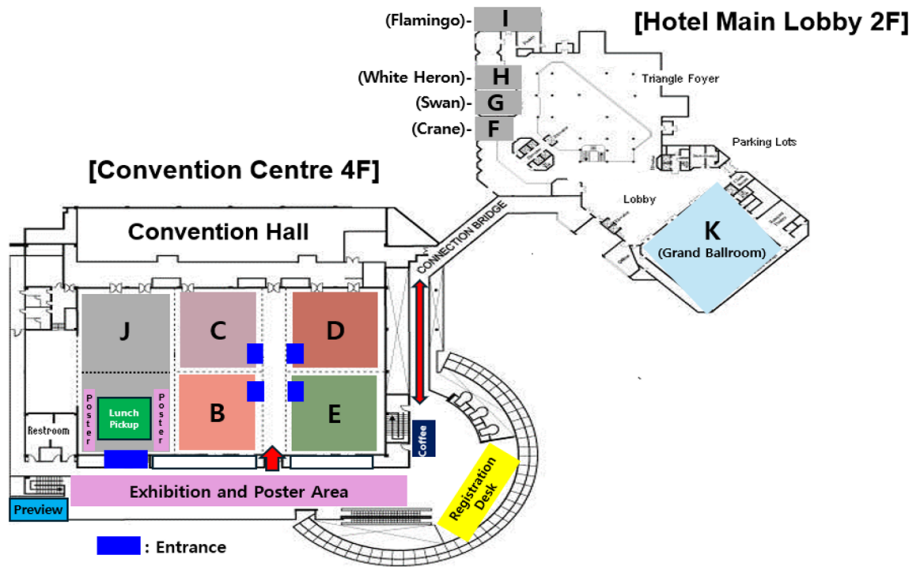
Internet Access

Details regarding Wi-Fi access will be posted throughout the venue

Social Media

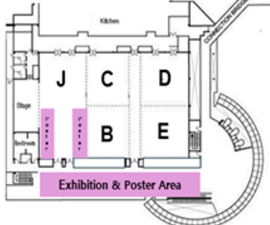
We encourage all attendees to share their conference experience on social media using the official hashtag **#ICNR2026**. Whether you're attending sessions, participating in workshops, or enjoying the social events, we'd love to see your posts and photos.

FLOOR PLAN AND MEETING ROOM LOCATION



FLOOR PLAN, POSTER and BOOTH LOCATION

Convention Centre 4F
Convention Hall



[Poster]

Poster Area 1 - RWR: P-001 to P-026
Poster Area 2 - RWR: P-027 to P-050
Poster Area 3 - RWR: P-051 to P-064
Poster Area 4 - RWR: P-065 to P-078
Poster Area 5 - NIS: P-139 to P-154
Poster Area 6 - NIS: P-155 to P-168 and P-180

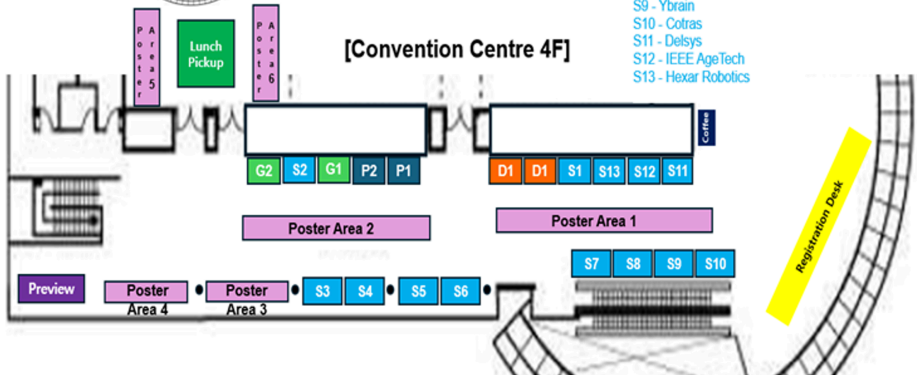
[Lunch]

- Lunch Pickup: Room J
- Dining Rooms: Room B, C, D, E, J

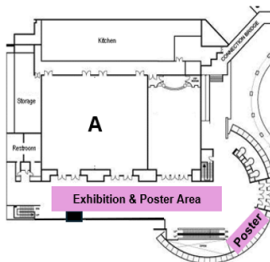
[Booth]

- D1 - Angel Robotics
- P1 - ICN, Grupo ICOT
- P2 - Hospital Universitario Los Madroños
- G1 - IEEE EMBS
- G2 - IMOON HEALTH CARE
- S1 - Dagu Convention & Visitors Bureau
- S2 - Jeju Tourism Organization
- S3 - G-tec
- S4 - OT Bioelectrónica
- S5 - Neubond
- S6 - Pharma Research Medical
- S7 - HRobotics
- S8 - Enside
- S9 - Ybrain
- S10 - Cotras
- S11 - Delisys
- S12 - IEEE AgeTech
- S13 - Hexar Robotics

[Convention Centre 4F]



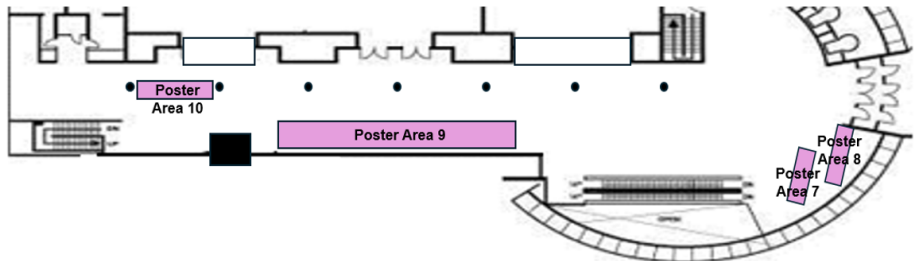
Convention Centre 3F



[Poster]

Poster Area 7 - CMC: P-117 to P-126
Poster Area 8 - CMC: P-127 to P-138
Poster Area 9 - AICM: P-079 to P-116
Poster Area 10 - CTIT: P-169 to P-179

[Convention Centre 3F]



SOCIAL PROGRAM

Opening Reception, Welcome Cocktail & Music Festival (Rock Band)

Tuesday, September 29th, 2026

7:00 pm – 9:00 pm

Venue: Room K (Grand Ballroom, 2nd Floor, Main Lobby, Swiss Grand Hotel)

Ticket Price: Free, included in the ICNR2026 Registration fee

Dress Code: Business casual



OPENING & WELCOME RECEPTION

Wine, Beer & Live Music

FEATURING

Band for You

PERFORMANCE HIGHLIGHTS

Shine (Mr. Big)

Don't Look Back in Anger (Oasis)

Dani California (RHCP)

+ etc.

Korean History and Culture Night: National Museum of Korea

Wednesday, September 30th, 2026

6.00 pm to 9.00 pm

As a living vestige of Korea's history and culture, The National Museum of Korea is home to today's best collection of history and culture deeply rooted within the Korean people. Regular exhibitions and education programming speak of the numerous anecdotes of the nearly 420,000 collected historical artifacts with thousands of years of history, while also offering realistic digital animations and VR technology to provide a more impactful experience. The museum includes everything from a simple hand axe of the Paleolithic Period and a magnificent golden crown of the Three Kingdoms Period to Goryeo Period celadons, or pottery, and paintings dating back to the Joseon Period, as well as pictures of modern-era Korea and a variety of other zones dedicated to different cultures throughout the globe.



Conference Banquet

Thursday, October 1st, 2026

7:30 pm – 10:00 pm

Venue: Room K (Grand Ballroom, 2nd Floor, Main Lobby, Swiss Grand Hotel)

Ticket Price: 100 USD, to be optionally purchased during registration and subject to availability

Dress Code: Business casual

RESEARCH LABORATORIES AND CLINICAL TOURS

Korea Institute of Science and Technology (KIST)

Friday, October 2nd, 2026

4.00 pm to 6.00 pm

Max. 40 people

Korea Institute of Science and Technology (KIST) represents Korea's modern scientific and technological advancement, founded to drive national innovation through cutting-edge research. Located in Seoul, KIST serves as a hub where fundamental science meets real-world applications, spanning fields such as robotics, materials, healthcare, and energy. With a strong emphasis on interdisciplinary collaboration and global partnerships, KIST reflects Korea's transition into a knowledge-based society and offers visitors insight into how science and technology shape the nation's present and future.

Participants will be required to present a government-issued ID at entry and provide the following information:

Full name

Affiliation

Contact information (e.g., mobile phone number)



Seoul National University (SNU) – Robotics Research Group

Friday, October 2nd, 2026

4.00 pm to 6.00 pm

Max. 40 people

The Seoul National University Robotics Research Group represents a multidisciplinary research initiative at Seoul National University that brings together diverse laboratories working at the forefront of robotics, artificial intelligence, and human-centered technologies. Spanning areas such as soft and bio-inspired robotics, robot learning, computer vision, healthcare and wearable robotics, and autonomous systems, the program focuses on developing intelligent machines that can safely and effectively interact with humans and complex environments. Its research emphasizes both fundamental advances—such as novel actuators, sensing technologies, and learning algorithms—and real-world applications in healthcare, industrial automation, and service robotics, reflecting a broader mission to translate cutting-edge engineering into impactful solutions that enhance human capability and quality of life.



Angel Robotics

Friday, October 2nd, 2026

4.00 pm to 6.00 pm

Max. 40 people

Angel Robotics is a wearable robotics company founded in 2017, dedicated to advancing technologies and commercialization in line with its mission, “Recreating Human Ability with Technology.” The company focuses on healthcare while expanding into defense and industrial safety. Angel Robotics’ core technology is based on real-time interaction between the robot and the user, enabling precise intention recognition and refined force control. These technological capabilities have been validated through gold medals at the Cybathlon in 2020 and 2024. Key products include the “ANGEL LEGS M20,” a multi-joint wearable robot, and the “ANGEL SUIT H10,” a hip-assist wearable robot, both used for overground gait training.



National Rehabilitation Center (NRC)

Friday, October 2nd, 2026

4.00 pm to 6.00 pm

Max. 40 people

The National Rehabilitation Center (NRC), operated by the Ministry of Health and Welfare of the Republic of Korea, is a public institution dedicated to rehabilitation medicine, research, and public rehabilitation services. NRC provides specialized clinical rehabilitation services for people with disabilities, including individuals recovering from stroke, spinal cord injury, and musculoskeletal conditions, while also conducting advanced research in rehabilitation robotics, assistive technologies, and digital health. In particular, NRC carries out translational research programs in both rehabilitation robots and care robots, helping bridge the gap between technology development, clinical application, and real-world service implementation. In addition, NRC trains healthcare professionals and supports the development of national rehabilitation policies and standards. Through these integrated functions, it plays a central role in promoting functional recovery, independence, and social reintegration for people with disabilities in Korea.

During this site visit, participants will have the opportunity to explore key facilities that demonstrate how the NRC integrates research, clinical practice, and service innovation in rehabilitation and care robotics.

Visit Highlights:

- 1) Smart Care Space (2F, Nuri Building). A demonstration space featuring care robots and smart care technologies designed for daily living and support in real-world care environments.
- 2) Rehabilitation Robot Gym (2F, Narae Building). A research-oriented space dedicated to translational research in rehabilitation robotics, where advanced robotic systems are developed, tested, and evaluated.
- 3) Robot-Assisted Therapy Room (1F, Main Hospital Building). A clinical treatment space where rehabilitation robots are actively used in therapy, showing how robotic technologies are integrated into patient care.



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