



2026 IEEE World Congress on Computational Intelligence



21-26 June 2026 | MECC Maastricht, the Netherlands

Workshop "AI-driven innovation in Neurotechnologies" (25 June 2026) - IJCNN 2026 Held within the 2026 IEEE World Congress on Computational Intelligence (WCCI 2026)

Venue: Maastricht Exhibition & Congress Centre (MECC), Forum 100, 6229 GV Maastricht, The Netherlands (<https://attend.ieee.org/wcci-2026/venue-2/>)

Room: 2.2 Zambezi

Organizers: Nadia Mammone, Maryam Alimardani, Anna Esposito, Cosimo Ieracitano, Toshihisa Tanaka

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Workshop overview: Neural engineering sits at the frontier between neuroscience, AI, and biomedical engineering. The field increasingly relies on computational intelligence (CI) methods, such as neural networks, reinforcement learning, evolutionary computation, and explainable AI, to model, interface with, and augment neural systems. This workshop, organized by the INNS Section "AI for Neural Engineering" (AINE) and by the "Italian Society of Neural Networks" (SIREN) aims to bring together researchers from computational intelligence, neuroscience, neuroprosthetics, and biomedical signal processing to promote dialogue and collaboration. Topics include brain-computer interfaces (BCIs), neuro-inspired AI architectures, adaptive neuromodulation systems, and data-driven modeling of neural dynamics. By aligning with the WCCI themes, the workshop emphasizes the cross-fertilization between computational models of intelligence and biological neural systems. The event will provide a platform for presenting emerging research, discussing methodological challenges, and shaping future interdisciplinary directions at the intersection of AI and neural engineering.

TECHNICAL PROGRAM

9:00-9:15	Welcome from the Workshop Organizing Committee, from INNS AINE Section and from SIREN
9:15-10:00	Invited Keynote Speech: "Life Inside the Machine: A New Direction for Intelligence" <i>Prof. Reinhold Scherer</i> , University of Essex, UK
10:00-10:15	Energy-Aware Hyperdimensional Computing for EEG-Based ADHD Classification Simone Colella, Federica Colonnese, <i>Antonello Rosato</i> and Massimo Panella
10:15-10:30	Effects of Electromyographic Artifacts on Speech Decoding from Intracranial Electroencephalogram <i>Shoya Murakami</i> , Yu Watanabe, Shuji Komeiji, Tatsuya Takei, Takumi Mitsuhashi, Yasushi Imura, Hiroharu Suzuki, Hidenori Sugano, Koichi Shinoda, and Toshihisa Tanaka
10:30-10:45	Distilling Attention: Cross-Architecture Knowledge Distillation for Efficient EEG-Based Motor Imagery Classification <i>Jan Korczyński</i> , Maryam Alimardani
10:45-11:00	BandVQ: Band-Wise Vector-Quantized EEG Foundation Model <i>Jamiyan Sukhbaatar</i> , Satoshi Imamura, and Toshihisa Tanaka
11:00-11:30	<i>Coffee Break</i>
11:30-11:45	Stacked LoRA for Subject-Adaptive EEG Foundation Models in Motor Imagery Decoding Ayman Sarhane, Fouad Lbakali, <i>Mouad Souissi</i> , Jonathan Lys, and Giulia Lioi
11:45-12:00	An explainable deep learning framework for trustworthy EEG signal decoding <i>Natale Laganà</i> , Cosimo Ieracitano, Muhammad Suffian, Francesco C. Morabito, Nadia Mammone
12:00-12:15	Toward a Systemic Neuroprosthetic Paradigm: Insights from Traditional Chinese Medicine for Next-Generation Brain-Computer Interfaces Haiyan Wang, Yanmei Wang, Zixiang Tang, Yucheng Wu, <i>Yanbing Wang</i>

- 12:15-12:30 **Learning the dimension of BiMap layers in SPD networks**
Yacine Meftah, Marco Congedo, and Laurent Bougrain
- 12:30 - 12:45 **Acting on Uncertainty: Adaptive Neural Interfaces for Robust Cognitive Control**
Patrick O. Akinwumi, Itunu Olaniran Akande, Meihua Qian, Oyinkansola A. Babatope
- 12:45-13:30 *Lunch*
- 13:30-14:15 **Invited Keynote Speech: "Brain-inspired Neurotechnologies for Predictive Modelling in Health"**
Prof. Nikola Kasabov, Auckland University of Technology, Computer Science, Auckland, New Zealand
- 14:15-14:30 **Classifier-Targeted Threshold Optimization for Unsupervised Spiking Neural Networks**
Razvan-Gabriel Petec, Pierre Tirilly, Ioan Marius Bilasco, and Grigoreta Sofia Moldovan
- 14:30-14:45 **Sampling Matters: An Empirical Study of Point Cloud Sampling Strategies for Brain MRI-Based Alzheimer's Disease Classification**
Towhidul Islam, Jumana Alqudah, Hadeel Saad Alghamdi, David J Brown, Mufti Mahmud
- 14:45-15:00 Closing Remarks & **Best Oral Presentation Award**

