

IEEE Brain Discovery and Neurotechnology Workshop

September 12–13, 2025
Vancouver, BC, Canada



WORKSHOP SCHEDULE

Day 1: Friday, September 12, Doors and Registration Open at 7:30am

- 8:00 **Welcome and Opening Remarks**
Vesna Sossi, Workshop Co-Chair, University of British Columbia
Ljiljana Trajkovic, Workshop Co-Chair, Simon Fraser University
- 8:15 **Opening Address: Anahita Kyani, Neuroscience, Data Science and Digital Health, Johnson & Johnson Innovative Medicine**
Rewiring the Brain Digitally: The Role of Digital Health in Neurotechnology
- Track 1: Emerging Neurotechnologies**
- 9:00 **Keynote: Elisa Konofagou, Columbia University, USA**
Ultrasound Neuromodulation of the Central and Peripheral Nervous System Towards Pain Treatment
- 9:50 **Karen Cheung, University of British Columbia, Canada**
Hybrid Biomaterials and Microfabricated Electrode Arrays for Spinal Cord Interface Technologies
- 10:10 **Christoph Guger, g.tec, Austria**
Brain-Computer Interfaces for Neurorehabilitation and Ultra-high Density
- 10:30 **Break**
- 10:50 **Alyosha Molnar, Cornell University, USA**
Chip-scale Wireless Neural Implants: How Small Can We Go?
- 11:10 **Ritchie Chen, University of California, San Francisco, USA**
Mapping Latent States via Multimodal Neural-Behavioral Phenotyping
- 11:30 Track 1 Speakers Q&A
- 12:00 **Lunch (provided)**
- 12:30 **Ethics and Standards for Neurotechnology Panel**
Moderator: Laura Cabrera, Penn State University, USA
Jose L. Contreras-Vidal, University of Houston, USA
Judy Illes, University of British Columbia, Canada
Sara Berger, IBM Director, Notre Dame-IBM Tech Ethics Lab, USA

Track 2: Machine Learning and Computer Paradigms for Brain Discovery

- 2:00 **Keynote: Tülay Adali, University of Maryland, BC, USA**
Matrix and Tensor Factorizations for Neuroimaging Data Analysis and Fusion
- 2:45 **Catie Chang, Vanderbilt University, USA**
Multimodal functional imaging of human brain dynamics
- 3:05 **Bratislav Mistic, McGill University, Canada**
Integrating and Interpreting Brain Maps
- 3:25 **Break**
- 3:45 **Armin Iraj, Georgia State University, USA**
Mapping Spatial and Temporal Dynamics for Brain Discovery and Clinical Insight
- 4:05 **Roger Tam, University of British Columbia, Canada**
Practical Considerations for Applying Machine Learning to Brain MRIs
- 4:25 Track 2 Speakers Q&A
- 5:00 **Break**
- 5:15 **Evening Address: Kathleen Kramer, IEEE President**
- 5:30 **The Future of Brain Research and Neurotechnology Innovation Panel**
Moderator: Ljiljana Trajkovic, Simon Fraser University
Kathleen Kramer, IEEE President
Vesna Sossi, IEEE NPSS Past-President
Tülay Adali, IEEE SPS, 2023 IEEE Brain Chair
Metin Akay, IEEE EMBS, 2024 IEEE Brain Chair
Anahita Kyani, IEEE EMBS Women in Engineering Chair
Maria Palombini, Director, Healthcare and Life Sciences Global Practice Lead, IEEE SA
Milin Zhang, IEEE SSCS Representative
Tiago Falk, IEEE SMC Representative
Keshab Parhi, IEEE CASS Representative
Ravi Hadimani, IEEE Magnetics Society Representative
- 7:00 **Reception**
- 8:00 *Day 1 Workshop Concludes*

Day 2: Saturday, September 13, Doors and Registration Opens at 7:30am

- 8:00 **Welcome to Day 2**
Vesna Sossi, Workshop Co-Chair, University of British Columbia
Ljiljana Trajkovic, Workshop Co-Chair, Simon Fraser University
- 8:15 **Opening Address: Alain Dagher, Montreal Neurological Institute, McGill University, Canada**
Computational Models of Neurodegeneration Provide Insights into Disease Mechanisms
- Track 3: Clinical Applications and Impact**
- 9:00 **Keynote Speaker: Peter Konrad, Rockefeller Neuroscience Institute, West Virginia University, USA**
Frontiers of Neuromodulation: Opioid Use Disorder
- 9:50 **Stefanie Blain-Moreas, McGill University, Canada**
What do complexity, entropy and criticality of the human electroencephalogram reveal about states of consciousness?
- 10:10 **Break**
- 10:30 **Dean Krusienski, Virginia Commonwealth University, USA**
Analysis of Local Field Potentials for Neurological Disorders

- 10:50 **Randy McIntosh, Simon Fraser University, USA**
Translating Brain Network Simulations into Clinical Insight with The Virtual Brain
- 11:10 Track 3 Speakers Q&A
- 11:45 **Poster Session & Live Demonstration Introductions: Lightning Talks**
- 12:30 **Lunch (provided)**
- 1:00 **Poster Session & Live Demonstrations**
- 2:30 **Break**
- 2:45 **Clinical Challenges and Technology Needs Panel**
Moderator: Martin McKeown, University of British Columbia, Canada
Alain Dagher, Montreal Neurological Institute, McGill University
Stefan Lang, Division of Neurosurgery, University of British Columbia, Canada
Julie Robillard, University of British Columbia, Canada
Vesna Sossi, University of British Columbia, Canada
Laura Cabrera, Penn State University, USA
Jose L. Contreras-Vidal, University of Houston, USA
- 4:15 **Light Reception**
- 5:15 **Best Poster and Live Demonstration Awards**
- 5:45 **Closing Remarks**
- 6:00 *Day 2 Workshop Concludes*

All times are Pacific Time.