

IEEE Brain Discovery and Neurotechnology Workshop

Science and Engineering Hall, George Washington University, Washington DC, USA

November 9-10, 2023

Program Schedule

Day 1: Thursday, Nov 9, 9am – 7:00pm EST

9:00 Welcome and Opening Remarks

Lijie Grace Zhang, Local Chair, George Washington University

Tülay Adali, IEEE Brain Chair and General Chair, University of Maryland, BC

Ramana Vinjamuri, General Chair, University of Maryland, BC

Session 1: Emerging Neurotechnologies

9:10 **Keynote: Tim Denison, Oxford, UK**

Bioelectronic Chronotherapy: Towards “Rhythm-aware” Neural Implants

10:00 **Dean J. Krusienski, Virginia Commonwealth University, USA**

Decoding of Speech from Intracranial Activity

10:20 **Claire Rabut, Caltech, USA**

Fundamentals of Functional Ultrasound Imaging

10:40 Coffee Break

11:00 **Alexander von Lühmann, Technische Universität Berlin, Germany**

Diffuse Optical Tomography for Neuroscience in the Everyday World: Progress and Challenges

11:20 **Mahsa Shoaran, EPFL, Switzerland**

Intelligent Neural Interfaces for Chronic Neurological and Psychiatric Disorders

11:40 Emerging Neurotechnologies Panel Discussion

12:30 Lunch Break (on your own)

2:00 Afternoon Remarks

John Lach, Dean School of Engineering and Applied Science, George Washington University

Session 2: Machine Learning for Brain Discovery

2:10 **Keynote: Dani Smith Bassett, University of Pennsylvania, USA**

Quantifying Economy in Networks

3:00 **Richard Betzel, Indiana University, USA**

Edge-centric Connectomics

3:20 **Dominique Duncan, University of Southern California, USA**

Machine Learning Approaches to Study Post-Traumatic Epilepsy

3:40 Coffee Break

4:00 **Archana Venkataraman, Boston University, USA**

Deep Imaging-Genetics to Parse Neuropsychiatric Disorders

- 4:20 **Behtash Babadi, University of Maryland, College Park, USA**
Advances in Granger Causality Inference with Case Studies from Auditory Neuroscience
- 4:40 Machine Learning for Brain Discovery Panel Discussion
- 5:30 **Light Reception, Exhibits**
- 5:45 **IEEE Brain Neuroethics Panel (60 min): Guiding Responsible Neurotechnology Innovation – Anticipation and Responsiveness around BCIs**
Chair: Laura Y. Cabrera, Pennsylvania State University; IEEE Brain Neuroethics Chair
Jennifer French, Executive Director, Neurotech Network
Armani Porter, Senior Manager, Intellectual Property & Business Development, Magnus Medical
Martijn De Neeling MD, Amsterdam UMC, Chair IEEE SA WG P2794
Kim Thacker MD, MS, Neurologist and Bio/Neuroethicist
- 7:00 **Day 1 Workshop concludes**

Day 2: Friday, Nov 10, 9am - 6:30pm EST

Session 1: Clinical Applications and Impact

- 9:00 **Keynote: Lee Miller, Northwestern University, USA**
In Pursuit of a Biomimetic iBCI for Dexterous Hand Use Following Spinal Cord Injury
- 10:00 **Jennifer Collinger, University of Pittsburgh, USA**
Intracortical Brain-computer Interfaces for Computer Access at Home
- 10:20 **Nick Ramsey, UMC Utrecht, The Netherlands**
BCI Implants for Home Use
- 10:40 **Coffee Break**
- 11:00 **Aiko Thompson, Medical University of South Carolina, USA**
Operant Conditioning of Motor Evoked Potentials to Enhance Neurorehabilitation after CNS Injuries
- 11:20 **Monica A. Perez, Northwestern University, USA**
Are We Optimizing Our Rehabilitative Therapies Enough?
- 11:40 Clinical Applications and Impact Panel Discussion
- 12:30 **Lunch Break (on your own)**
- 2:00 **Sponsoring Agencies Panel: Opportunities and Challenges in Brain Research**
Chairs: Vince Calhoun, Georgia State University, USA;
Tülay Adalı, IEEE Brain Chair, University of Maryland, BC, USA
Brooks Gross, NINDS
Chou Hung, Neurophysiology of Cognition, US DEVCOM Army Research Laboratory - ARO
Vani Pariyadath, NIH/NIDA
Abera Wouhib, NIH/NIMH
- 4:00 **Full Reception, Posters, Exhibits**
- 6:00 **Awards**
- 6:30 **Day 2 Workshop concludes**