



Welcome!

Los Angeles Cutting Garden

- CuttingEEG since 2014
- 2023: 20 gardens over 4 continents

University of
Montreal

USC



GLOBAL PROGRAM

Mon. October 16th

Tue. October 17th

Wed. October 18th

Thu. October 19th

Local programs

South America (GMT -4)		Challenges and Opportunites in Real Time EEG processing and classification tools for Brain Computer Interfaces	Reproducible Processing Pipelines and Multiverse Analysis	Deep Neural Network Analysis of MEEG data	Europe (GMT +1)	
9:30	Global program	Theoretical Advances in Cognitive Neuroscience made through MEEG			14:30	
9:45		The Gut-Brain-Consciousness Axis --Catherine Tallon-Baudry--	Geometric Deep Learning meets BCI --Reinmar Kobler--	EEGManyPipelines --Elena Cesnaite--	14:45	
10:00					15:00	
10:15					15:15	
10:30		Tracking Attentional Dynamics Across Vision, Working Memory, and Action --Freek Van Ede--	Facing the Small Data Reality --Michael Tangermann--	The Data-Processing Multiverse of Event-Related Potentials --Peter Clayson--	Classic Machine Learning versus Deep Learning: Is there a Clear Winner? --Maarten De Vos--	15:30
10:45					15:45	
11:00					16:00	
11:15		break	break	break	break	16:15
11:30		Emergence of language during early developement --Clément François--	Conducting BCI Protocols with Patients --Theresa Vaughan--	Agreed Reporting Template for EEG Methodology - International Standard --Anđela Šoškić--	Using Artificial DNN to Predict and Understand Human Vision --Radoslaw Martin Cichy--	16:30
11:45					16:45	
12:00					17:00	
12:15	Discussion	Discussion	Discussion	Discussion	17:15	
12:30					17:30	

Local programs

THE GLOBAL TEAM



Maximilien Chaumon
Founder and Co-President



Anne Sophie Dubarry
Co-President



Anaïs Llorens
CRA (Executive Board)



Christelle Zelinski
CRA (Executive Board)



Alexandra Corneylie
CRA (Executive Board)



Sophie Herbst
Advisory Board



Clément François
Advisory Board



Robert Oostenveld
Advisory Board



Aina Puce
Advisory Board



François Tadel
Independent Consultant




Adrien Schramm
Independent Consultant

LOCAL PROGRAM

(WEDNESDAY 18TH AND THURSDAY 19TH)

WEDNESDAY 18/10/2023		THURSDAY 19/10/2023	
EEB132		EEB132	
8:30	Global Program	8:30	Global Program
09:00	Welcome Desk	09:00	Local Talks
09:15	<i>Opening of the LA Garden</i> Richard Leahy	Session 1: <i>Computational Tools and Pipelines for ML analysis</i> Arnaud Delorme Tim Mullen Ivan Tashev Bin He	
09:30	<i>Introduction & Overview of Brainsuite</i> David Shattuck	09:30	
10:00	<i>Brainsuite Demo & Discussion</i> Anand Joshi	10:00	
10:30	<i>Introduction to EEG/MEG Analysis</i> Richard Leahy	10:30	
11:00	<i>Wearable Sensing Demo</i> Cameron Sacks	11:00	Session 2: <i>Self Supervised Learning</i> Dominique Duncan Wenhui Cui
11:30		11:30	
12:00	Lunch break	12:00	Lunch break
13:00	<i>Brainstorm Workshop</i> <i>with the Brainstorm Team</i> Raymundo CASSANI & Takfarinas MEDANI	13:00	Local Talks
14:00		Session 3: <i>Machine Learning for brain computer interfaces</i> Alexander Silva Maryam Shanechi Ludovic Bellier	
15:00		Panel Discussion: <i>The Role of Foundational Models in Spontaneous and Event-Related EEG</i> Shri Narayanan Kristina Lerman	
16:00		Session 4: <i>Machine Learning for neurological disorders</i> Srikantan Nagarajan Dimitrios Pantazis Jason da Silva Castanheira	
17:00		17:00	
17:30	The reception is canceled and moved from Wednesday to Thursday	17:30	Reception
18:00		18:00	









WEDNESDAY 18TH



USC Viterbi
School of Engineering
*Ming Hsieh Department of
Electrical and Computer Engineering*

Local Program

Wednesday, October 18

8:30	<i>Registration/Continental Breakfast</i>	
9:15	Opening of the Los Angeles Garden	Richard Leahy, University of Southern California
 9:30	Introduction and Overview of Brainsuite	David Shattuck, University of California, Los Angeles
10:15	<i>Coffee Break</i>	
 10:30	Brainsuite Tools & Discussion	Anand Joshi, University of Southern California
 11:00	Introduction to EEG/MEG Analysis	Richard Leahy, University of Southern California
 11:45	EEG Live Demo & Discussion	Cameron Sacks, Wearable Sensing
12:00	<i>Lunch Break</i>	
 12:30	Brainstorm Hands-On Tutorial	Raymundo Cassani, McGill University Takfarinas Medani, University of Southern California
12:30	Training Material Installation with Online Assistance	
 13:00	Introduction to Brainstorm	
13:30	Loading Anatomy and Recordings Set Anatomy/Review Raw Recordings/Import Events	
 14:35	Preprocessing Frequency Filters/Artifact Detections/Artifact Correction with SSP	
15:30	<i>Coffee Break</i>	
15:45	Analysis Sensor Level Import Recording/Review Trials/Trial Averages	
 16:20	Source Estimation Forward Model (aka Head Model)/Noise Covariance Matrix/Source Estimation (from EEG and MEG recording)	
16:55	Analysis Source Level Cortex Parcellations: Atlases & Scouts/Noise Covariance Matrix/Source Estimation (from EEG and MEG recording)	
17:30	<i>Discussion and Closing</i>	

This morning

9:15 – **Richard Leahy (University of Southern California):** Opening of the LA Garden

9:30 – **David Shattuck (University of California, Los Angeles):**
“Introduction and Overview of Brainsuite”

10:15 ***Coffee Break***

10:30 – **Anand Joshi (University of Southern California):**
“Brainsuite Tools & Discussion”

11:00 – **Richard Leahy (University of Southern California):**
“Introduction to EEG/MEG Analysis”

11:45 – **Cameron Sacks (Wearable Sensing):**
“EEG Live Demo & Discussion ”

12:00 – ***Lunch Break***

This afternoon

12:30–17:30 – Tutorial – Hands-On Brainstorm

13:30–14:35 **Loading anatomy and recordings**

14:35–15:35 **Pre-processing**

15:30–15:45 ***Coffee Break***

15:45–16:20 ***Analysis sensor level***

16:20–16:55 ***Source estimation***

16:55–17:15 ***Analysis source level***

17:30 – Discussion and closing

THURSDAY



USC Viterbi

School of Engineering
Ming Hsieh Department of
Electrical and Computer Engineering

Local Program

Thursday, October 19

8:30	Continental Breakfast
	Machine Learning and EEG Session 1: Computational Tools and Pipelines for ML Analysis Session Chair- Richard Leahy, University of Southern California
9:00	Machine Learning and the BIDS EEG Data Format Arnaud Delorme, University of California, San Diego
9:25	Creating Deployable Workflows for EEG Signal Processing and ML/DL Using NeuroPype Tim Mullen, Intheon Labs
9:50	Workload Estimation Using Brain- and Bio- Signals for Adaptive Training System Ivan Tashev, Microsoft Research
10:15	AI/ML Enhances Dynamic Brain Imaging from EEG/MEG Bin He, Carnegie Mellon University
10:40	Coffee Break
	Machine Learning and EEG Session 2: Self Supervised Learning Session Chair- Takfarinas Medani, University of Southern California
11:00	Unsupervised Multivariate Time-Series Transformers for Seizure Identification on EEG Dominique Duncan, University of Southern California
11:25	Neuro-GPT: A Foundation Model Pretrained on Large-Scale EEG Data Wenhui Cui, University of Southern California
12:00	Lunch Break
	Machine Learning and EEG Session 3: Machine Learning for Brain Computer Interfaces Session Chair- Shrikanth Narayanan, University of Southern California
13:00	A High Performance Neuroprosthesis for Speech Decoding and Avatar Control Alexander Silva, University of California, San Francisco
13:30	AI-powered Next-generation Neurotechnologies Maryam Shanechi, University of Southern California
14:00	Reconstructing Pink Floyd from Human Auditory Cortex Ludovic Bellier, University of California, Berkeley
14:40	Panel Discussion: The Role of Foundational Models in Spontaneous and Event Related EEG Moderators- Shrikanth Narayanan, Kristina Lerman, University of Southern California
15:10	Coffee Break
	Machine Learning and EEG Session 4: Machine Learning for Neurological Disorders Session Chair- Kristina Lerman, University of Southern California
15:40	Machine Learning Algorithms for Electromagnetic Brain Imaging in Dementia Srikantan Nagarajan, University of California, San Francisco
16:05	Graph Representation Learning of MEG Signals Opens a Window to Aging Trajectories and Alzheimer's Disease Dimitrios Pantazis, Massachusetts Institute of Technology
16:30	Inter-individual Differences in Neurophysiology Vary with Age and Disease Jason da Silva Castanheira, McGill University
17:00	Closing and Final Remarks

Session 1:

Computational Tools and Pipelines for ML analysis

Session Chair: Richard Leahy

9:00–9:25- **Arnaud Delorme (University of California, San Diego):**
“Machine learning and the BIDS EEG data format”

9:25–9:50- **Tim Mullen (Intheon Labs):**
“Creating Deployable Workflows for EEG Signal Processing and ML/DL Using NeuroPype”

9:50–10:15- **Ivan Tashev (Microsoft Research):**
“Workload estimation using brain- and bio- signals for adaptive training system”

10:15–10:40- **Bin He (Carnegie Mellon University):**
“AI/ML Enhances Dynamic Brain Imaging from EEG/MEG”

Coffee Break (10:40–11:00)

Session 2: Self-Supervised Learning;

Session Chair: Takfarinas Medani

11:00–11:25– **Dominique Duncan (University of Southern California):**
“Unsupervised Multivariate Time-Series Transformers for Seizure Identification on EEG”

11:25–11:50– **Wenhui Cui (University of Southern California):**
“Neuro-GPT: A Foundation Model Pretrained on Large-Scale EEG Data”

Lunch Break (12:00–13:00)

Session 3:

Machine Learning for Brain-Computer interfaces

Session Chair: Shrikanth Narayanan

13:00–13:30- **Alexander Silva (University of California, San Francisco):**
“A high performance neuroprosthesis for speech decoding and avatar control”

13:30–14:00- **Maryam Shanechi (University of Southern California):**
“AI-powered next-generation neurotechnologies”

14:00–14:30- **Ludovic Bellier (University of California, Berkeley):**
“Reconstructing Pink Floyd from human auditory cortex”

Lunch Break (12:00–13:00)

Panel Discussion

Moderator:

Shrikanth Narayanan and Kristina Lerman (University of Southern California)

14:40–15:10

“The Role of Foundational Models in Spontaneous and Event-Related EEG”

Coffee Break(15:10–15:40)

Session 4: Machine Learning for Neurological Disorders

Session Chair: Kristina Lerman

15:40–16:05– **Srikantan Nagarajan (University of California, San Francisco):**
“Machine learning algorithms for electromagnetic brain imaging in dementia”

16:05–16:30– **Dimitrios Pantazis (Massachusetts Institute of Technology):**
“Graph representation learning of MEG signals opens a window to aging trajectories and Alzheimer’s disease”

16:30–16:55– **Jason da Silva Castanheira (McGill University):**
“Inter-individual differences in neurophysiology vary with age and disease”

Closing and Final Remarks

17:00 – 19:00 – **Reception**

Brainstorm Workshop: Survey



<https://forms.gle/KsWjXiYX5UP8JN7y9>

THE LOS ANGELES TEAM

Takfarinas Medani



Richard Leahy



Shrikanth Narayanan



Kristina Lerman



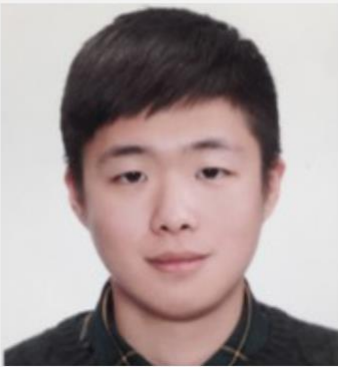
Gloria Halfacre



Raymundo Cassani



Woojae Jeong



Chinmay Chinara





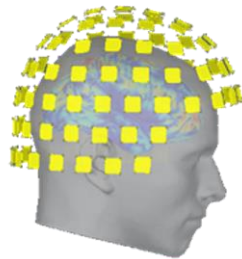
USC University of
Southern California

Los Angeles
Cutting Garden



Thank You!

USC Viterbi
School of Engineering



Biomedical Imaging Group



Information Sciences Institute



WEARABLE 
Sensing

Next Brainstorm Workshop

2nd International Conference on

Artificial Intelligence in Epilepsy and Neurological Disorders



April 1st – 4th 2024

Park city, ut, usa

www.AIEPILEPSY-NEURO.com

Algorithms, machine learning, deep learning and artificial intelligence in epilepsy and neurological disorder clinical care, practice and research with special emphasis on devices, wearables, apps and platforms

This year on April 1st we will also hold a special Workshop on the Brainstorm Platform for Clinicians and Scientists and its use in Stereotactic EEG and Epilepsy Surgery

Organizing Committee:

Sam Lhatoo MD, Philippe Ryvlin, Michael Sperling, Sandor Beniczky

For any information: Aiepilepsy-neuro@ant-congres.com

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