3rd International Conference on

ARTIFICIAL INTELLIGENCE IN EPILEPSY AND NEUROLOGICAL DISORDERS

MARCH 3 – 6, 2025 - BRECKENRIDGE, CO, USA

SCIENTIFIC PROGRAM

WELCOME

It is with great pleasure that we launch the third edition of The International Conference on Artificial Intelligence and Other Neurological Disorders in what promises to be another exciting series of lectures, platform presentations, and panel discussions on machine learning, deep learning and artificial intelligence in the field.

The first edition held in Breckenridge Colorado in March 2023 was a major success, attended by clinicians, neuroscientists, computer scientists, engineers, and industry from all over the world. The second, held in Park City in April 2024, was even more well attended.

From the contributions made and interest shown so far, we know that we are at an important juncture, where new technologies and advances are poised to impact clinical practice and research to an extent where education and awareness in the community has become a critical need. In Park City, we opened up the conference to a limited online audience as well. This year, there will be an online option to allow those who cannot attend in person, to view content and interact with speakers and the audience. The conference will be held at the Beaver Run Resort in Breckenridge, Colorado.

This year, we will have a $10,000 prize for a competition for the best AI epilepsy algorithm on training and testing datasets that we will provide.
As we do every year, there will be 3 prizes of $1,000 each for the best poster presentation
On March 3rd, we will hold the second special Workshop on the Brainstorm Platform for Clinicians and Scientists and its use in Stereotactic EEG and Epilepsy Surgery.

Sam Lhatoo, on behalf of the organizing committee.

UTHealth Houston
McGovern Medical School

COMMITTEES

Organizing Committee

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

Scientific Committee

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CONFERENCE SECRETARIAT

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AGENDA

All sessions will be held in the Colorado Ballroom - Conference Center Level 3

MARCH 3RD, 2025

8.30 am	5.30 pm	**Brainstorm workshop**	
6.00 pm	7.00 pm	**Session 1. Welcome and Inaugural lecture**	
7.00 pm	9.00 pm	Refreshments	

MARCH 4TH, 2025

7.00am	7.30am	Breakfast	
7.30am	9.40am	**Session 2. Data, Platforms and Methods for AI**	
9.40am	12.30 pm	Break	
12.30 pm	1.30 pm	**Industry sponsored lunch symposium**	
1.30pm	3.40pm	**Session 3. Phenotyping Epilepsy Part 1.**	
3.40pm	4.00 pm	Coffee Break	
4.00 pm	6.30 pm	**Session 4. Genotyping Epilepsy**	 

MARCH 5TH, 2025

7.00am	7.30am	Breakfast	
7.30am	9.40am	**Session 5. Diagnosis and Treatment**	
9.30am	12.30pm	Break	
12.30pm	1:30pm	**Industry sponsored lunch symposium**	
1.30pm	3.40pm	**Session 6. AI in Neurological Diseases**	
3.40pm	4.00 pm	Coffee Break	
4.00 pm	6.30pm	**Session 7. Phenotyping Epilepsy Part 2.**	

MARCH 6TH, 2025

7.00am	7.30am	Breakfast	
7.30am	9.40am	**Session 8. Operationalized AI**	
9.40am		Closing of the Conference	

PROGRAM

MARCH 3RD, 2025

8.30 pm	5.30 pm	**BRAINSTORM WORKSHOP**

Session 1. Welcome and Inaugural lecture

5.30 pm	6.00 pm	**Registration Desk Opening**
6.00 pm	6.15 pm	**Welcome address** *Sam Lhatoo, USA*
6.15 pm	7.00 pm	**Large Language Models: How They Work, Current Limitations, and What's Next** *C. Jermaine, USA*
7.00 pm	9.00 pm	**Refreshments**

MARCH 4TH, 2025

7.00 am	7.30 am	***Breakfast***

Session 2. Data, Platforms and Methods for AI

Chairs: Philippe Ryvlin, Barbara Jobst
Panel : All Speakers

7.30 am	7.50 am	**The European Health Data Space for an AI Future - Andrea Ganna (Finland)** *M. Shah, UTH, USA*
7.50 am	8.10 am	**AI for Epilepsy Decision Support** *M. Sperling , USA*
8.10 am	8.30 am	**From Algorithms to Bedside: Harnessing AI and Informatics in Biomedical & Clinical Endeavors** *C. Tao , USA*
8.30 am	8.50 am	**Neural Resonance and AI** *R. Smith , USA*
8.50 am	9.10 am	**Re-visiting AI Based Detection of Generalized Convulsive Seizures** *P. Ryvlin , Switzerland*
9.10 am	9.20 am	**Panel Discussion**
9.20 am	9.30 am	**Platform 1: Deep Convolutional Neural Networks Compared to Bandpass Spectral Power for Seizure Detection in Subcutaneous EEG** *B. Brinkmann , USA*

PROGRAM

9.30 am	9.40 pm	**Platform 2: Neural dynamic divergence: an unsupervised machine learning approach to modeling seizure onset and spread** *W. Ojemann , USA*
9.40 pm	12.30 pm	***Break***
12.30 pm	1.30 pm	Industry sponsored lunch symposium - Ceribell (Non - CME event) **The Shakiness of Ground Truth in EEG: Problem of interrater variability and its impact on AI Development** *J. Parvizi , USA*

SESSION 3. Phenotyping Epilepsy Part 1.
Chairs: Michael Sperling, Jin Jing
Panel: All Speakers

1.30 pm	1.50 pm	**Noise Cancelation: Diagnosing Epilepsy with AI** *B. Westover , USA*
1.50 pm	2.10 pm	**Morgoth: Using AI for EEG Reporting** *J. Jing , USA*
2.10 pm	2.30 pm	**Universal latent space EEG representations for classification, clustering and prognostication** *C. Meisel , Germany*
2.30 pm	2.50 pm	**Formalizing temporal-spatial reasoning for epilepsy and electrophysiology-based phenotyping** *GQ Zhang , USA*
2.50 pm	3.10 pm	**Large Language Models for Phenotyping Epilepsy** *L. Moura , USA*
3.10 pm	3.20 pm	**Panel discussion**
3.20 pm	3.30 pm	**Platform 1: Eye-Tracking Reveals Search Behaviour in Epilepsy Patients** *M. Steininger , Germany*
3.30 pm	3.40 pm	**Platform 2: Exploring the Capacity of Normal Interictal EEGs to Detect Focal Epilepsy Using Machine Learning** *N. Wagh , USA*
3.40 pm	4.00 pm	***Coffee Break***

SESSION 4. Genotyping Epilepsy
Chairs: Dennis Lal, Lara Jahi
Panel: All speakers

4.00 pm	4.20 pm	**The Artificial Intelligence Alliance** *L. Jehi , USA*
4.20 pm	4.40 pm	**LLMs in the genetics of epilepsy** *D. Bobbili , Luxembourg*

PROGRAM

4.40 pm	5.00 pm	**Use AI tools to enhance clinical epilepsy genetics care and global education** *D. Lal, USA*
5.00 pm	5.20 pm	**Polygenic risk prediction of risk for common epilepsies** *H. Heyne , Germany*
5.20 pm	5.40 pm	**AI in rare genetic epilepsies** *C. Bosselman , Germany*
5.40 pm	5.50 pm	**Panel discussion**
5.50 pm	6.00 pm	**Platform 1: Towards an Explainable Neural Network for Epilepsy Seizure Detection and Classification** *A. Kogan , Israel*
6.00 pm	6.10 pm	**Platform 2: Efficient generalized tonic-clonic seizure detection with wearable devices** *J. Dan , Switzerland*
6.10 pm	6.20 pm	**Seizure Detection Prize** *J. Dan , Switzerland*
6.20 pm	6.30 pm	**Prize Announcements**
6.30 pm		***Close***

MARCH 5TH, 2025

7.00 am	7.30 am	***Breakfast***

SESSION 5. Diagnosis and Treatment
Chairs: Sameer Sheth, Sophie Adler
Panel: All speakers

7.30 am	7.50 am	**Using AI for Focal Cortical Dysplasia** *S. Adler , UK*
7.50 pm	8.10 am	**Artifical Intelligence in Neural Periodicity and Treatment Response** *N. Provenza , USA*
8.10 am	8.30 am	**Using Imaging AI for Temporal Lobe Epilepsy Diagnosis** *Z. Gleichgerrcht , USA*
8.30 am	8.50 am	**Digital Twin: Spatiotemporal mapping of electro-genomic patterns at cellular level** *H. Heiland, Germany*

PROGRAM

8.50 am	9.10 am	**Using AI for SEEG Guided Sensing and Treatment of Mood Disorders** *S. Sheth, USA*
9.10 am	9.20 am	**Panel Discussion**
9.20 am	9.30 am	**Platform 1: Comparative Analysis of Signal Quality and Usability for a Novel Wireless, Wearable EEG Sensor** *V. Muvvala , USA*
9.30 am	9.40 am	**Platform 2: XGBoost Model Predicting 3 Hz Spike-and-Slow Wave Using Sleep EEG without Provoking Seizure** *S.S. Kim , Korea*
9.40 am	12.30pm	***Break***
12.30 pm	1.30 pm	Industry sponsored lunch symposium - UCB (Non - CME event) **Expert Insights Improving the Care of Patients with Dravet Syndrome and Lennox-Gastaut Syndrome**

SESSION 6. AI in Neurological Diseases

Chairs: Sunil Sheth, Jerome Jeevarajan
Panel: All Speakers

1.30 pm	1.50 pm	**Symmetry sensitive deep learning networks in stroke** *L. Giancardo , USA*
1.50 pm	2.10 pm	**2D to 3D angiographic image translation, aneurysm flow dynamics and outcomes prediction** *V. Keshav Chivukula , USA*
2.10 pm	2.30 pm	*M. Boers, The Netherlands*
2.30 pm	2.50 pm	**NLP for accelerated stroke detection** *B. Kummer , USA*
2.50 pm	3.10 pm	**Stroke outcomes prediction using net water uptake and DL networks** *J. Jeevarajan , USA*
3.10 pm	3.20 pm	**Panel discussion**
3.20 pm	3.30 pm	**Platform 1: Automatic Real-Time Video-Based Seizure Detection in Edge Devices** *V. Mayer Garção (Portugal)*
3.30 pm	3.40 pm	**Platform 2: Automatic Delineation of Surgical Resection in Pre- and Post-op MRIs Using a Neural Network** *A. Joshi , USA*
3.40 pm	4.00 pm	***Coffee Break***

PROGRAM

SESSION 7. Phenotyping Epilepsy Part 2

Chairs: Sandor Beniczky, Birgit Frauscher
Panel: All Speakers

4.00 pm	4.20 pm	**Guidelines for Reporting EEG &Neurophysiology Biomarker Evaluation for Application to Neurology: GREENBEAN** *S. Beniczky , Denmark*
4.20 pm	4.40 pm	**Consciousness - A Machine Learning Approach** *A. Ilyas , USA*
4.40 pm	5.00 pm	**Video AI for Seizure Recognition** *C. Meisel , USA*
5.00 pm	5.20 pm	**Predicting Epilepsy Outcomes: Leveraging AI in Multimodal Imaging and EEG Integration** *K. Davis , USA*
5.20 pm	5.40 pm	**AI for prediction of the epileptic focus using SEEG: the class imbalance problem** *B. Frauscher , USA*
5.40 pm	5.50 pm	***Coffee Break***
5. 50 pm	6.00 pm	**Platform 1: Prediction of Post-traumatic Epilepsy using MR based Imaging Markers** *A. Joshi , USA*
6.00 pm	6.10 pm	**Platform 2: Conceptualizing the seizure generation process as a competition between networks allows predicting surgical outcomes** *J. Montoya-Gálvez, Spain*
6.10 pm	6.20 pm	**Platform 3: Interictal Spike Asymmetry on Scalp EEG to Lateralize Temporal Lobe Epilepsy** *J. Kim, USA*
6.20 pm	6.30 pm	**Prize Announcements**
6.30 pm		***Close***

MARCH 6TH, 2025

7.00 am	7.30 am	***Breakfast***

SESSION 8. Operationalized AI

Chair: Samden Lhatoo

7.30 am	7.50 am	**Operationalizing AI in the Hospital Environment** *L. Jehi , USA*

PROGRAM

7.50 am	8.10 am	**Operationalizing AI -Beyond Closed Loop Stimulation** *S. Desai , USA*
8.10 am	8.30 am	**Ceribell's Story of overcoming challenges to develop the first and only FDAapproved AI algorithm for diagnosing status epilepticus** *B. Kamousi , USA*
8.30 am	8.50 am	**Short Seizure Detection in Ultra-Long Term EEG** *J. Duun-Henriksen , Denmark*
8.50 am	9.10 am	**Medical AI - Hits, Misses and Lessons** *E. Andre , USA*
9.10 am	9.20 am	**Panel Discussion**
9.20 am	9.30 am	**Platform 1: Machine Learning Analysis of Sleep for Sudden Unexpected Death in Epilepsy (SUDEP) Biomarkers** *O. Magana Tellez , USA*
9.30 am	9.40 am	**Platform 2: Spatially Context-Aware Transformers Facilitate Modeling-Based Anomaly Detection of Epilepsy Associated Lesions in Brain MRIImages** *A. Mosig ,Germany*
9.40 am		***Closing of Conference***

POSTER LISTING

P01 **Automatic Diagnosis and Classification of Epilepsy Using Multi-Frequency Brain Signals and Artificial Intelligence Models**
Jing Xiang, USA

P02 **Deep Convolutional Neural Networks Compared to Bandpass Spectral Power for Seizure Detection in Subcutaneous EEG**
Jordan Clark, USA

P03 **Eye-Tracking Reveals Search Behaviour in Epilepsy Patients**
Melissa Steininger, Germany

P04 **XGBoost Model Predicting 3 Hz Spike-and-Slow Wave Using Sleep EEG without Provoking Seizure**
Seung Soo Kim, Republic of Korea

P05 **Seizure Forecasting Using Deep Brain Stimulator Recorded Local Field Potential in The Anterior Nucleus of Thalamus**
Xinbing Zhang, USA

P06 **Prediction Models on Eye Tracking Data in Epilepsy**
Anna Jansen, Germany

P08 **A Machine Learning Approach for Stratifying Ictal EEG Patterns and Optimizing Epilepsy Surgery Outcomes**
Fawzi Babtain, Saudi Arabia

P09 **Exploring the Capacity of Normal Interictal EEGs to Detect Focal Epilepsy Using Machine Learning**
Neeraj Wagh, USA

P10 **AI-Driven Robotic Stereo-EEG Planning: A Novel Approach in Refractory Epilepsy Care**
Fawzi Babtain, Saudi Arabia

P11 **Reptile-Based Meta-Learning Classifier for Seizure Detection Using Multichannel EEG Signals**
Swathy Ravi, India

P12 **Optimizing Personalized Epilepsy Care: Machine Learning Models for Predicting Treatment Success with Eslicarbazepine**
Yoo Jisu, Republic of Korea

P13 **Towards an Explainable Neural Network for Epilepsy Seizure Detection and Classification**
Alexandra Kogan, Israel

POSTER LISTING

P14 **Efficient generalized tonic-clonic seizure detection with wearable devices**
Jonathan Dan, Switzerland

P15 **Comparative Analysis of Signal Quality and Usability for a Novel Wireless, Wearable EEG Sensor**
Vamshi Muvvala, USA

P16 **Neural dynamic divergence: an unsupervised machine learning approach to modeling seizure onset and spread**
William Ojemann, USA

P17 **An Unobtrusive and Lightweight Ear-worn System for Continuous Epileptic Seizure Detection and Prediction**
Nguyen Vp, USA

P18 **Automatic Real-Time Video-Based Seizure Detection in Edge Devices**
Vicente Mayer Garção, Portugal

P19 **Comparing the performance of automated feature extraction from medical imaging reports using large language models and rule-based algorithms - a retrospective feasibility study**
Vedant R Bahel, Canada

P20 **Automatic Delineation of Surgical Resection in Pre- and Post-op MRIs Using a Neural Network**
Anand Joshi, USA

P21 **Prediction of Post-traumatic Epilepsy using MR based Imaging Markers**
Anand Joshi, USA

P22 **Automated Workflow for EEG and sEEG Electrode Localization and Labeling in Brainstorm for Advanced Neuroimaging**
Chinmay Chinara, USA

P23 **Optimizing electrode placement and information capacity for local field potentials in cortex**
Jace Willis, USA

P24 **Interictal Spike Asymmetry on Scalp EEG to Lateralize Temporal Lobe Epilepsy**
Juri Kim, USA

P25 **Conceptualizing the seizure generation process as a competition between networks allows predicting surgical outcomes**
Justo Montoya-Gálvez, Spain

POSTER LISTING

P26 **Predicting cortico-cortical evoked potentials using a Bayesian Neural Network in patients with drug-resistant epilepsy**
Sahaj Anilbhai Patel, USA

P27 **EEGPT: A General-Purpose Transformer for EEG Analysis**
William Lehn-Schiøler, Denmark

P28 **Machine Learning Analysis of Sleep for Sudden Unexpected Death in Epilepsy (SUDEP) Biomarkers**
Oman Magana Tellez, USA

P29 **Epileptogenic Zone Localization using Neural Fragility in Simulated Interictal iEEG Data**
Logan Cook, USA

P30 **Optimizing MEG Sensor Arrays for Enhanced Source Localization: Insights from the Cramér-Rao Lower Bound Framework**
Yash Vakilna, USA

P31 **Decoding Depression and Suicidality Related Neural Features from EEG**
Woojae Jeong, USA

P32 **Epileptic-spike propagation to the thalamus**
Ganne Chaitanya, USA

P33 **Spatially Context-Aware Transformers Facilitate Modeling-Based Anomaly Detection of Epilepsy Associated Lesions in Brain MRI Images**
Johannes Schwarz, Germany

P34 **Saccadic Eye Movement Related Theta Resetting Fluctuates with Top-Down Control**
Kevin Tyner, USA

P35 **EpiScalp™: A Novel AI-Based Tool for Improved Epilepsy Diagnosis from Interictal Scalp EEG**
Mark Hays, USA

NOTES

NOTES

SPECIAL THANKS TO OUR PARTNERS

INSTITUTIONAL PARTNERS

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