Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
Università degli Studi di Napoli Federico II

Progetto EBRAINS-Italy - Missione 4, Componente 2, Linea di investimento 3.1 del PNRR
Finanziato dall'Unione europea – NextGeneration EU (CUP B51E22000150006)

Workshop

The EBRAINS-Italy Research Infrastructure for Neuroscience challenges

02-04 December 2024--Villa Doria D'Angri, Napoli

02 December 2024

The role of Research Infrastructures for Neuroscience in the development of Italian Research

08:30-09:30 Participant registration and journalist accreditation

09.30-10:15 ***Institutional addresses***

Matteo Lorito, Rettore dell'Università degli Studi di Napoli Federico II
Antonio Garofalo, Rettore dell'Università degli Studi di Napoli Parthenope, Presidente CUR Campania

Cristina Trombetti, Direttrice Dipartimento di Matematica e Applicazioni, Università degli Studi di Napoli Federico II
Ivo Rendina, Direttore ISASI - CNR
Angela Mariani, Direttrice DISEGIM, Università degli Studi di Napoli Parthenope
Domenico Tafuri, Direttore DISMMEB, Università degli Studi di Napoli Parthenope

Massimo Rubechi, Capo di Gabinetto MUR

Introduction: A. Marasco UNINA and G. Sorrentino UNIPARTHENOPE-ISASI

10:15-11:15 ***Exploring the future of EBRAINS-Italy in tackling neurological disease challenges***

Advancing Italian neuroscience research: The Strategic Role of EBRAINS-Italy and its multidisciplinary facilities, Rosanna Migliore and Michele Migliore, Scientific coordinators EBRAINS-Italy

The EBRAINS European Infrastructure and the national contribution, Francesco Pavone, EBRAINS AISBL Italian node leader

The role of EBRAINS in basic Neuroscience, Alessandro Vercelli-Past President of SINS

The changing horizon of Neurological Sciences, Alessandro Padovani- President of SIN

Introduction: G. Sorrentino UNIPARTHENOPE-ISASI

11:15-11.45 Coffee break

11:45-12:30 *Round table:* ***Sustainability perspectives of PNRR investments dedicated to Research Infrastructures***

Michele Mazzola, Ufficio III - Internazionalizzazione della ricerca MUR
Lorenzo Marrucci, Delegato alla ricerca UNINA
Giorgio Budillon, Delegato alla ricerca UNIPARTHENOPE
Lorenza Evangelista, Ufficio supporto alla ricerca e grant, CNR

Moderator: F. Spataro, Infrastructure Manager

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12:30-12:50 State-of-the art of EBRAINS-Italy RI (F. Spataro, IR Manager)
12:50-13:10 Financial/Procedures reporting (A. Tomasino, Adm. Coordinator)

13:10-14:40 *Lunch break*

Overview of the WPs scientific and training activities

14:40-15:20 WP1: Management and coordination (M. Migliore, CNR)

15:20-16:00 WP2: Experimental data production facilities and services (F. Pavone, UNIFI)

16:00-16:40 WP3: Analysis, modelling, simulation facilities and services (E. D'Angelo, UNIPV)

16:40-17:10 *Coffee break*

17:10-17:50 WP4: Data storage and computing facilities (C. Padrin, CINECA)

17:50-18:30 WP5: EBRAINS-Italy Training and Innovation (G. Baldassarre, CNR-ISTC)

Poster session

18:30-19:30 *Poster session*

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WP 2 scientific achievements

09:30-09:50 Multimodal analysis of human neuronal activity (J. Mapelli, UNIMORE)
09:50-10:10 Microscale topology of interactions during anesthesia (G. Bardella, UNIROMA1)
10:10-10:30 Brain slice patch-clamp and morphometric analysis of mouse hippocampal neurons along aging: an update (M. Renzi, UNIROMA1)
10:30-10:50 Electrophysiological characterization of human cortical neurons from brain tissue of pediatric patients with drug-resistant cortical dysplasia (S. Marinelli, EBRI)

10:50-11:20 ***Coffee Break***

WP 3 scientific achievements

11:30-11:50 *Recurrent neural networks as digital-twins of cortical areas* (M. Mattia, ISS)
11:50-12:10 Cerebellar models: from cellular properties to virtual brain twins (D'Angelo, UNIPV)
12:10-12:30 Modeling of hippocampal neurons and the trisynaptic circuit (R. Migliore, CNR)
12:30-12:50 Continual Learning models for perception and motor control (E. Falotico, SSSA)

13:00-14:30 ***Lunch break***

14:40-15:00 Designing Neuromorphic Systems: Prototyping End-to-End IoT Applications (G. Urgese, POLITO)
15:00-15:20 Modeling realistic CA1 neuron dynamics in response to synaptic inputs using A-GLIF models for large-scale network implementations (A. Marasco, UNINA)
15:20-15:40 Mouse and Human Hippocampus CA1: models and simulations (S. M. G. Solinas, UNISS)

Hands-on activities, working groups, and poster session

15:40-16:00 *Working group 1*: EBRAINS-Italy Training and Innovation Committee (G. De Bonis, INFN)

16:00-16:30 *Coffee Break*

16:40-17:20 Hands-on training: Aula 11-PT, *Modeling neuron dynamics with A-GLIF models: from experimental traces with constant current injections to predicted responses to synaptic inputs* (E. Spera, CNR-IBF and C. Tribuzi, UNINA)
16:40-17:20 Hands-on training: Aula Procida-1P, *Getting started with Cobrawap* (G. De Bonis and C. Lupo, INFN)

17:20-18:00 Hands-on training: Aula Procida-1P, *Neural network activity visualization with virtual reality Headset* (S. M. G. Solinas, UNISS)
17:20-18:00 Hands-on training: Aula 11-PT, *Realistic modelling of brain microcircuits: The Brain Scaffold Builder* (F. Marchetti, UNIPV)

18:00-19:00 *Poster session*

20:30 ***Social dinner***

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WP 3 scientific achievements

09:30-9:50 Apical amplification for spiking plastic simulations of incremental learning, dreaming and deep sleep cycles (P. S. Paolucci, INFN)
09:50-10:10 A pipeline for decoding visual stimuli from task-evoked and spontaneous activity in EEG (D. Nuzzi, CNR-ISTC)
10:10-10:30 An automated toolbox for modeling flexible goal-directed cognition: advancements and achievements from use case 23 (G. Baldassarre-G. Granato, CNR-ISTC)

WP 2 scientific achievements

10:30-10:50 Understanding Brain Function and Dysfunction: The Role of the Protein Structures in Therapy (E. Mastrangelo, CNR)

11:00-11:30 ***Coffee Break***

11:30-11:50 An intracerebral insight on the neural correlates of conscious perception (P. Avanzini, IN)
11:50-12:10 Intracerebral correlates of conscious perception in human (A. Pigorini, UNIMI)
12:10-12:30 From data to models and back: using brain imaging to infer pathophysiological mechanisms (P. Sorrentino, CNR)

Hands-on activities, working groups, and poster session

12:30-13:00 *Working group 2*: The EBRAINS-Italy website, (L. L. Bologna, CNR)

13:00-14:30 ***Lunch break***

14:30-15:15 *Working group 3*: Data management (CINECA)
15:15-15:30 *Summary and conclusions*

15:30-16:30 Hands-on training: Aula Procida-1P, *STSimM: a new tool for evaluating neuron model performance and detecting spike trains similarity* (C.A. Lupascu, CNR-IBF and C. Tribuzi, UNINA)
15:30-16:30 Hands-on training: Aula 11-PT, *Data driven strategies for protein structure prediction and design* (F. Raimondi, SNS)