The 4th International Workshop on Computationally Intelligent Methods in Processing and Analysis of Neuronal Big Data

at

The 15th International Conference on Brain Informatics (BI2022), Padova, Italy, July 15-17, 2022

https://bi2022.org/

Organizers:

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Introduction:

The brain receives and processes information simultaneously coming from diverse sources. The neurons, being the basic information processing units, interconnect to each other to form hierarchical and/or parallel pathways. Technologies related to neural systems engineering have been employed to study these pathways along with processing and modelling neuronal data for disease diagnosis and brain decoding purposes.

Combining both experimental and computational approaches in recent years, thanks to the advancements in neuro techniques, scientists can access a large amount of neuronal data and apply computationally intelligent and nature-inspired machine learning techniques including deep learning and reinforcement learning on those data to suggest next-generation experimental design aiming to decipher brain's information processing capabilities and diagnose its diseases.

Scope:

Developing data-intensive and intelligent tools, as well as sophisticated neuro techniques, to process and analyse neuronal big data is one of the biggest challenges posed to today's multidisciplinary brain science community. To share recent progress in decoding neuronal information processing, both in the healthy and diseased brain, this special session aims to provide a forum for scientists from diverse disciplines including – computer, electrical, biomedical, and neuro-engineering – who are looking for more relevant information in interpreting brain functions and diagnosing diseases using expert and computationally intelligent systems.

This workshop expects to attract papers on recent research progress in the area of intelligent computational tools and techniques in acquiring and processing neuronal big data. The focus areas include, but are not limited to, the following:

Ø Neural systems engineering and technology to study neural pathways;

Ø Processing and modelling of neuronal data for disease diagnosis and brain decoding;

Ø Bio-inspired methods for network analysis and pattern recognition in neural data;

Ø Novel machine learning techniques for neuronal big data analysis;

Ø Application of deep and reinforcement learning to neuronal big data analysis;

Ø Computationally intelligent techniques for neuroscience applications;

Ø Neuroinformatics (including cloud computing and real-time systems);

Ø Cognitive science applications (learning, workload, decision making, etc.) and data analytics;

Ø Computational and imaging methods for human brain connectome; and

Ø Information analysis in human brain-machine interface (invasive, noninvasive).

Submission of papers:

Submit Springer Lecture Notes in Computer Science (LNCS) complaint – 10-12 page – pdf paper to the Special Session following the steps below:

Ø Prepare the paper as per the Springer LNCS template from: http://www.springer.com/us/computer-science/lncs/conference-proceedings-guidelines

Ø Visit https://wi-lab.com/cyberchair/2022/bi22/scripts/submit.php?subarea=B

Ø Select the link Submit a New Paper (TYPE I Submission)

Ø Select Workshop on Computationally Intelligent Methods in Processing and Analysis of Neuronal Big Data

Ø Provide paper details (i.e., Author(s), Paper Title, Abstract, Keywords, PDF file to upload)

Important dates:

Ø Paper submission deadline: **April 1, 2022**

Ø Decision notification: **May 13, 2022**

Ø Workshop date: **July 15, 2022**

Ø Conference dates: **July 16-17, 2022**