Special Issue

Computational Challenges of High-Density Biosensor Data Analysis

Message from the Guest Editors

The proliferation of high-density biosensor (EEG, MEG, EMG, ECoG, fNIRS) measurement systems present growing problems in data analysis due to the increases in measurement dataset size, patient population, sampling frequency, etc. Routine analysis is typically performed by scripting environments and algorithms designed for single-core computing systems that cannot fully utilize the capabilities of modern computing systems. The aim of this Special Issue is to explore how the fundamental changes in computer architecture (multi-core revolution, GPU and FPGA accelerators, cloud computing, supercomputers) affect multi-sensor biosignal data processing. This Issue welcomes original research articles and review papers that demonstrate the efficient use of these new data processing techniques and analysis algorithms and novel data analysis system architecture designs that demonstrate efficient use of multi-core, GPU, cloud, and other HPC systems. Case studies of very large dataset analysis studies, implementations using accelerators and/or HPC systems, the performance analysis of advanced signal processing methods, and reports on clinical application experiments are especially welcome.

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Sensors is a leading journal devoted to fast publication of the latest achievements of technological developments and scientific research in the huge area of physical, chemical and biochemical sensors, including remote sensing and sensor networks. Both experimental and theoretical papers are published, including all aspects of sensor design, technology, proof of concept and application. Sensors organizes Special Issues devoted to specific sensing areas and applications each year.

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