

Concurrency and Computation: Practice and Experience
Special Issue on:

Advances in Modelling and Simulation for Big-data Applications
(AMSBA)

Call for Papers

Since the Internet introduction, we witness an explosive growth in the volume, velocity, and variety of the data created on a daily basis. This data is originated from numerous sources including mobile devices, sensors, individual archives, Internet of Things, government data holdings, software logs, public profiles in social networks, commercial datasets, etc. The issue so-called the 'Big Data' problem requires the continuous increase of the processing speeds of the servers and of the whole network infrastructure.

The Big Data era poses a critically difficult challenge and striking development opportunities to Data Intensive (DI) and High-Performance Computing (HPC): how to efficiently turn massively large data into valuable information and meaningful knowledge. Computational-effective DI and HPC are required in a fast-increasing number of data-intensive domains.

Modeling and Simulation (MS) are widely considered essential tools in many areas of science and engineering for the prediction and analysis of complex systems and natural phenomena. They often require a significant amount of computational resources with large data sets typically scattered across different geographical locations. Furthermore, the development of such complex modeling and simulation environments usually requires collaborative efforts from researchers with different domain knowledge and expertise, possibly at distinct locations.

MS have often offered suitable abstractions to manage the complexity of the analysis of large data in various scientific and engineering domains. Unfortunately, Big Data problems are not always easily amenable to efficient MS over DI and HPC, due to the complexity of the systems, and to the lack of simple way in which the analysis can be parallelized. Also, MS communities may lack the detailed expertise required to exploit the full potential of HPC solutions, and HPC architects may not be fully aware of specific MS requirements.

This special issue will primarily encompass practical approaches that advance research in all aspects of MS for Big Data applications. The main role of simulation techniques in this domain is to create the suitable framework for applications modeling, development and testing before deployment in real world. The Special Issue focuses on topics covering algorithms, architectures, management models, high performance computing techniques and large scale distributed systems. Successful contributions may range from advanced technologies, applications and

innovative solutions to global optimization problems in scalable large-scale computing systems to development of methods, conceptual and theoretical models related to Big Data applications and massive data storage and processing. We expect that this special issue will draw significant number of submissions, readership, and consequently numerous citations of the published contributions.

Recommended topic areas include, but are not limited to:

- Algorithms and applications for Big Data
- Network architectures to support Big Data analytics
- Network and resource provisioning approaches
- Big Data visualization techniques
- Big Data storage and management in the cloud, many-cloud and fog systems
- Security and trust in Big Data management
- Energy-awareness in Big Data management
- High Performance Computing Models
- Big Data Middleware
- Data Intensive Applications

The submitted papers must be original and must not be under consideration in any other venue. This special issue will be based on invitations. All submissions will be reviewed by at least three independent reviewers. The editors will approve final decisions on accepted papers.

Manuscripts should not exceed 16 pages in length and must be prepared for publication according to the following journal's Author Guidelines:

[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)15320634/homepage/ForAuthors.html](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)15320634/homepage/ForAuthors.html).

Tentative schedule:

Manuscript Due	June 14, 2014
First Decision Date	July 31, 2014
Revision Due	September 13, 2014
Final Decision Date	October 18, 2014
Final Paper Due	December 6, 2014

Guest Editors:

Florin Pop, University *Politehnica* of Bucharest, Romania, e-mail: florin.pop@cs.pub.ro (***Corresponding Editor***)

Mauro Iacono, Dipartimento di Scienze Politiche, Seconda Università degli Studi di Napoli, Italy, e-mail: mauro.iacono@unina2.it

Marco Gribaudo, Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy, e-mail: gribaudo@elet.polimi.it

Joanna Kołodziej, Institute of Computer Science, Cracow University of Technology,
Poland, e-mail: jokolodziej@pk.edu.pl