

INVITATION FOR CHAPTERS

“Big Data Platforms and Applications. Methods, Techniques and Performance Evaluation”

a book in “Studies in Big Data” Springer series

Extracting valuable information from raw data is especially difficult considering the velocity of growing data from year to year and the fact that 80% of data is unstructured. In addition, data sources are heterogeneous (various sensors, users with different profiles, etc.) and are located in different situations or contexts. This is why the Smart City infrastructure runs reliably and permanently to provide the context as a “public utility” to different services. Context-aware applications exploit the context to adapt accordingly the timing, quality and functionality of their services. The value of these applications and their supporting infrastructure lies in the fact that end-users always operate in a context: their role, intentions, locations and working environment constantly change. 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 on 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. In this context, new models for resource management are required. This 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.

The large volume of data coming from a variety of sources and in various formats, with different storage, transformation, delivery or archiving requirements, complicates the task of context data management. At the same time, fast responses are needed for real-time applications. With the emergence of the recent cloud infrastructures, achieving highly scalable data management in such contexts is a critical challenge, as the overall application performance is highly dependent on the properties of the data management service.

The book provides, in this sense, a platform for the dissemination of advanced topics of theory, research efforts and analysis and implementation for Big Data platforms and applications being oriented on Methods, Techniques and Performance Evaluation. The book constitutes a flagship driver towards presenting and supporting advance research in the area of Big Data platforms and applications. The focus of the Edited Book, and correspondingly the topics covered, will be on new architectures, methods, techniques, protocols, components and tools related to Big Data platforms and applications. These may include, but are not limited to the following topics:

Big Data Platforms

- Network architectures to support Big Data analytics
- Big Data storage and management in the cloud, many-cloud and fog systems
- Energy-awareness in Big Data management
- High Performance Computing Models
- Big Data Middleware
- Improving Data Governance, Security and Privacy

Big Data Applications

- Scientific Applications of Big Data
- Typical Big Data Applications: Geoscience, Social Web, Finance, e-Commerce, Health Care, Environment and Climate, Physics and Astronomy, Chemistry
- Big Data Analytics and Metrics
- Applications, Services and Business Models, Strategies, Interaction Paradigms
- Large-scale Recommendation Systems
- Quality Management and Service Level Agreement (SLA)
- Scalability, Robustness, Reliability, Verification, Validation, Benchmarking
- Performance Evaluation
- Big Data Quality and Provenance Control

Methods, Techniques and Performance Evaluation

- Modern Data Architecture
- Adaptive and Machine Learning for Big Data Applications
- Data-aware Scheduling
- Scheduling in Big Data Platforms
- Content Distribution Systems for Large Data
- Big Data Persistence and Preservation
- Data-intensive Computing Applications
- Scheduling for Many-Task Computing
- Green Computing
- Cloud Platforms for Big Data Processing
- Performance Evaluation

Development and Design Methodologies: Tools and Technologies

- Design of High-throughput Computing (HTC) Applications
- Cloud Workload Profiling and Deployment Control
- Cloud Computing Techniques for Big Data
- Workflow Scheduling and Scalability Analysis
- Programming Techniques for Big Data Processing
- Big Data in Mobile and Pervasive Computing
- NoSQL Ecosystems
- Hadoop and Spark Ecosystems
- In-Memory Processing

Notes for the Authors

The book can serve as an academic reference book, which covers cross-area topics in information and communication technologies. We expect that the contribution of each chapter can be presented in one of the following formats: Literature survey and review; Monograph technical articles; Research reports and papers; Case studies. Submitted chapters should not have been previously published nor be currently under consideration for publication elsewhere. A guide for authors, sample copies and other relevant information for submitting papers are available on the Author Guidelines page: <http://www.springer.com/series/11970>

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