INVITATION FOR CHAPTERS

"Resource Management for Big Data Platforms and Applications"

a book in "Studies in Big Data" Springer series

Many applications generate Big Data, like social networking and social influence programs, Cloud applications, public web sites, scientific experiments and simulations, data warehouse, monitoring platforms, and e-government services. Data grow rapidly, since applications produce continuously increasing volumes of both unstructured and structured data. Large-scale interconnected systems aim to aggregate and efficient exploit the power of widely distributed resources. In this context, scheduling models and algorithms implemented in various type of Resource Management Systems (RMS) have an important role. A large variety of solutions for specific applications and platforms exist so a thorough and systematic analysis of existing solutions for scheduling models, methods and algorithms used in Big Data processing and storage environments has a high importance.

Many fundamental issues in RMS remain open. Most of the current efforts still do not fully express the heterogeneity of different distributed systems, the interoperability between them, and the systems resilience. This book will primarily encompass practical approaches that advance research in all aspects of resource management for different type of systems: Cluster Computing, Grid Computing, Peer-to-Peer Computing, Cloud Computing and Ubiquitous Computing all involving elements of heterogeneity, having a large variety of tools and software to manage them. The main role of resource management techniques in this domain is to create the suitable frameworks for DI applications development and deployment, with respect to high performance. The book focuses on focuses on topics covering algorithms, architectures, management models, high performance computing techniques and large scale distributed systems.

The book provides, in this sense, a platform for the dissemination of advanced topics of theory, research efforts and analysis and implementation of resource management systems for Big Data platforms and applications. The book constitutes a flagship driver towards presenting and supporting advance research in the area of Big Data platforms and applications. The proposed book will encompass a total of around 15-18 chapters/contributions of high quality standard. Specifically, the book will aim to consist of around 3-4 sections, each section comprising of around 4-5 chapters.

The focus of the Edited Book, and correspondingly the topics covered, will be on new architectures, methods, techniques, protocols, components and tools related to the RMS for Big Data platforms and applications. These may include, but are not limited to the following topics:

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Fundamental Concepts and Theory

- Foundational Models for Resource Management
- Modern Data Architecture
- Distributed Scheduling and Load-Balancing Algorithms
- Adaptive and Machine Learning based Scheduling Algorithms
- Dynamic Resource Provisioning
- Data-aware Scheduling and Co-Allocation techniques
- Self-* Techniques for High Performance Scheduling
- Scheduling in Big Data Platforms
- Content Distribution Systems for Large Data
- Big Data Persistence and Preservation
- Data-intensive Computing Applications
- Resource Virtualization and Composition
- Task Offloading and Scheduling for Mobile Cloud Computing
- Scheduling for Green Computing

Development and Design Methodologies: Tools and Technologies

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

Big Data Platforms

- Network architectures to support Big Data analytics
- Network and resource provisioning approaches
- Big Data visualization techniques
- Big Data management in 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
- 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
- Anomaly Detection in Very Large Scale Systems
- Quality Management and Service Level Agreement (SLA)
- Scalability, Robustness, Reliability, Verification, Validation, Benchmarking
- Performance Evaluation
- Big Data Quality and Provenance Control

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

Important Dates

Submission of Proposal (1-2 pages):	September 30th, 2015	Notification of Chapter Acceptance	March 31th, 2016
Notification of Acceptance	October 15th, 2015	Revised Chapter Submission	April 30th, 2016
Sample Chapter Submission	November 30st, 2015	Book publishing	Summer of 2016
Full Chapter Submission	January 31th, 2016		