Big Data: Principles and Paradigms

Call for Book Chapters

Introduction

Rapid advances in digital sensors, networks, storage, and computation, along with their availability at low cost, are leading to the creation of huge collections of data – dubbed as Big Data. This data has the potential for enabling new insights that can change the way business, science, and governments deliver services to their consumers and can impact society as a whole. This has led to the emergence of the Big Data Computing paradigm focusing on sensing, collection, storage, management, and analysis of data from variety of sources to enable new value and insights.

To realize the full potential of Big Data, researchers and practitioners need to address several challenges and develop suitable conceptual and technological solutions for tackling them. These include life-cycle management of data, large-scale storage, flexible processing infrastructure, data modeling, scalable machine learning and data analysis algorithms, techniques for sampling and making trade-off between data processing time and accuracy, and dealing with privacy and ethical issues involved in data sensing, storage, processing, and actions.

Objectives

The primary purpose of this book is to capture the state-of-the-art in Big Data Computing, its technologies and applications. The book also aims to identify potential research directions and technologies that will facilitate insight generation in various domains from science, industry, business, and consumer applications. We expect the book to serve as a reference for larger audience such as systems architects, practitioners, developers, new researchers and graduate level students.

Topics of Interest

Topics for potential chapters include, but are not limited, to:

1. Big Data Science
   - Analytics
   - Algorithms for Big Data
   - Energy-efficient Algorithms
   - Big Data Search
   - Big Data Acquisition, Integration, Cleaning, and Best Practices
   - Visualization of Big Data

2. Big Data Infrastructures and Platforms
   - Programming Systems
   - Cyber-Infrastructure
   - Performance evaluation
   - Fault tolerance and reliability
   - I/O and Data management
   - Storage Systems (including file systems, NoSQL, and RDBMS)
   - Resource management

3. Big Data Security and Policy
   - Management Policies
   - Data Privacy
   - Data Security
   - Big Data Archival and Preservation
   - Big Data Provenance

4. Big Data Applications
   - Scientific application cases studies on Cloud infrastructures
   - Big Data Applications at Scale
   - Experience with Big Data Application Deployments
   - Data streaming applications
   - Big Data in Social Networks
   - Healthcare Applications
   - Enterprise Applications

Important Dates - Proposed

Chapter Proposal: You are invited to submit a 1-2 pages proposal describing the topic of your chapter. The proposal should include the chapter organization, anticipated number of pages of the final manuscript and brief biography of authors. We plan to follow the timeline given below:

- Proposal deadline: Feb 28, 2015 (**Early** expression of interest is highly encouraged)
- Notification of proposal acceptance: March 30, 2015
- Full draft chapter submission: June. 30, 2015
- Chapter review report to authors: July 30, 2015
- Final version submission: Aug. 30, 2015

Early submission is highly appreciated as the editors would like to have progressive dialogue and work with prospective authors to bring out a book of wide appeal.

If we receive more than one proposal for a chapter on the same topic, the editors may request authors to collaborate to develop an integrated chapter.

Manuscript Submission

Each accepted chapter should have about 20-35 A4 pages. We expect to deliver CRC of the book to the publisher. A MS Word template will be provided later.

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