Foreword

In the information age, data is generated explosively. For example, everyday there are 230 million tweets sent, 294 billion emails delivered, and 100 terabytes of data uploaded to Facebook according to IDC (2012). Important and useful information such as crime prevention and customer buying patterns could be buried inside the huge amount of unstructured data. How to effectively manage and use the big data is a big headache for organizations. Many IT researchers and scholars and organizations are working on this problem. Even the Obama Administration (White House, 2012) announced a "Big Data Research and Development Initiative." Several US Federal departments and agencies have pledged more than $200 million for this big data initiative. The departments and agencies and their big data themes include:

- **Together National Science Foundation (NSF) and the National Institutes of Health (NIH):** Core Techniques and Technologies for Advancing Big Data Science and Engineering.
- **National Science Foundation (NSF):** Including funding the big data solicitations, keeping with its focus on basic research, and implementing a comprehensive, long-term big data strategy.
- **Department of Defense (DOD):** Data to Decisions.
- **National Institutes of Health (NIH):** 1000 Genomes Project Data Available on Cloud.
- **Department of Energy (DOE):** Scientific Discovery through Advanced Computing.
- **US Geological Survey (USGS):** Big Data for Earth System Science.

Big data is critical and popular, but not many books about big data are available at this moment (2013) because big data research just began to attract attention. This book, *Big Data Management, Technologies, and Applications*, is a timely and urgently needed publication. It is unique among those available big-data books because of its great depth and technical approach. It consists of four practical themes:

1. **Big Data Technologies, Methods, and Algorithms:** Which gives various big data methods.
2. **Big Data Storage, Management, and Sharing:** Which covers the issues related to storing, managing, and sharing big data.
3. **Specific Big Data:** Which discusses big data in specific areas like social networks.
4. **Big Data and Computer Systems and Big Data Benchmarks:** Which explains the roles of big data in computer systems and introduces the benchmarks for big data.

Unlike most big data books, it covers big data from a technological perspective. Readers can actually apply the methods learned from this book to real-world problems.

Big data is everywhere now and valuable information is hiding in it. In the past, this information was simply ignored and opportunities were missed. Realizing the great importance of big data, organizations scramble to find hidden information buried in big data and try to make the best use of it. This book, *Big Data Management, Technologies, and Applications*, provides the most up-to-date, crucial, and practical information for big data management, technologies, and applications. If any IT students, researchers, scholars, and workers have big data in mind, they should not miss this book because it will help them understand various big data issues and apply the proposed big data methods to their problems. It is a great book contributed by sixty world-renowned big data researchers and scholars. I trust you will enjoy reading it.

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