Preface

The scope of this book includes leading edge in big data systems, architectures, and applications. Big data computing refers to capturing, managing, analyzing, and understanding the data at volumes and rates that push the frontiers of current technologies. The challenge of big data computing is to provide the hardware architectures and related software systems and techniques which are capable of transforming ultra large data into valuable knowledge. Big data and data-intensive computing demand a fundamentally different set of principles than mainstream computing. Big data applications typically are well suited for large-scale parallelism over the data and also require extremely high degree of fault tolerance, reliability, and availability. In addition, most big data applications require relatively fast response. The objective of this book is to introduce the basic concepts of big data computing and then to describe the total solution to big data problems developed by LexisNexis Risk Solutions.

This book comprises of three parts, which consists of 15 chapters. Part I on *Big Data Technologies* includes the chapters dealing with introduction to big data concepts and techniques, big data analytics and relating platforms, and visualization techniques and deep learning techniques for big data. Part II on *LexisNexis Risk Solution to Big Data* focuses on specific technologies and techniques developed at LexisNexis to solve critical problems that use big data analytics. It covers the open source high performance computing cluster (HPCC Systems®) platform and its architecture, as well as, parallel data languages ECL and KEL, developed to effectively solve big data problems. Part III on *Big Data Applications* describes various data-intensive applications solved on HPCC Systems. It includes applications such as cyber security, social network analytics, including insurance fraud, fraud in prescription drugs, and fraud in Medicaid, and others. Other HPCC Systems applications described include Ebola spread modeling using big data analytics and unsupervised learning and image classification.

With the dramatic growth of data-intensive computing and systems and big data analytics, this book can be the definitive resource for persons working in this field as researchers, scientists, programmers, engineers, and users. This book is intended for a wide variety of people including academicians, designers, developers,

educators, engineers, practitioners, and researchers and graduate students. This book can also be beneficial for business managers, entrepreneurs, and investors.

The main features of this book can be summarized as follows:

1. This book describes and evaluates the current state of the art in the field of big data and data-intensive computing.
2. This book focuses on LexisNexis' platform and its solutions to big data.
3. This book describes the real-life solutions to big data analytics.

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