

# Preface

The goal of this book is to present the methods of intelligent Web data management, including novel software architectures and emerging technologies and then validate this architecture using experimental data and real-world applications. Furthermore, the extensibility mechanisms are discussed. This book is organized to blend in with the research findings of the author in the past few years.

The contents of this book are focused on four popular thematic categories of intelligent Web data management: cloud computing, social networking, monitoring and literature management. There are a number of applications in these areas, but there is a lack of mature software architecture. Having participated in more than 20 software projects in the past 10 years, we have some interesting experience to share with readers. Therefore, this book attempts to introduce some new intelligent Web data management methods, including software architectures and emerging technologies. The book is organized into four parts as detailed below.

## Part I: Cloud Computing

Part I introduces intelligent Web data management in the area of cloud computing. This part emphasizes some software architectures of cloud computing.

Chapter 1 deals with intelligent Web data management of multi-tenant data middleware. This chapter introduces intelligent Web data management of a transparent data middleware to support multi-tenancy. This approach is transparent to the developers of cloud applications.

Chapter 2 presents intelligent Web data management of NoSQL data warehouse. This chapter introduces intelligent Web data management of NoSQL data warehouse, which is used to address the issue of formulating no redundant data warehouse with small amount of storage space for the purpose of their composition in a way that utilizes the MapReduce framework. The experiments are illustrated to successfully build the NoSQL data warehouse reducing data redundancy compared with document with timestamp and lifecycle tag solutions.

## Part II: Social Networking

Part II of this book introduces intelligent Web data management in the area of social networking. This part emphasizes some software architectures for social networking.

Chapter 3 presents intelligent Web data management of social question answering. This chapter introduces intelligent Web data management of a question answering system, which aims at improving the success ratio of the question answering process with a multi-tenant architecture.

Chapter 4 deals with intelligent Web data management of content syndication and recommendation. This chapter introduces intelligent Web data management of a content syndication and recommendation system. The experimental result depicts that the developed architecture speeds up the search and synchronization process, and provides friendly user experience.

## Part III: Monitoring

Part III of this book introduces intelligent Web data management in the area of monitoring. This part emphasizes some software architectures for intelligent monitoring.

Chapter 5 presents intelligent Web data management infrastructure and software monitoring. This chapter introduces intelligent Web data management of a light-weight module-centralized and aspect-oriented monitoring system. This framework performs end-to-end measurements at infrastructure and software in the cloud. It monitors the quality of service (QoS) parameters of the Infrastructure as a Service (IaaS) and Software as a Service (SaaS) layer in the form of plug-in bundles. The experiments provide insight into the modules of cloud monitoring. All the modules constitute the entire proposed framework to improve the performance in hybrid clouds.

Chapter 6 deals with intelligent Web data management of WebSocket-based real-time monitoring. This chapter introduces intelligent Web data management of a WebSocket-based real-time monitoring system for remote intelligent buildings. The monitoring experimental results show that the average latency time of the developed WebSocket monitoring is generally lower than polling, FlashSocket and Socket solution, and the storage experimental results show that our storage model has low redundancy rate, storage space and latency.

## Part IV: Literature Management

Part IV of this book introduces intelligent Web data management in the area of literature management. This part emphasizes some software architectures of literature management.

Chapter 7 illustrates intelligent Web data management for literature validation. This chapter introduces intelligent Web data management of a literature validation system, which aims at validating the literature by the author name from the third-party integrated system and the metadata from the DOI content negotiation proxy. The analysis of application's effect shows the ability to verify the authenticity of the literature by the author name from the system and the metadata from our DOI content negotiation proxy.

Chapter 8 presents intelligent Web data management for literature sharing. This chapter introduces intelligent Web data management of a bookmarklet-triggered unified literature sharing system. This architecture allows easy manipulation of the literature sharing and academic exchange, which are used frequently and are very often necessary in scientific activity such as research, writing chapters and dissertations, and preparing reports.

This book is written primarily for academic researchers who are interested in intelligent Web data management of some emerging software systems, or software architects who are interested in developing intelligent software architecture in the aspect of Web data management. However, it was also written keeping in mind the postgraduates who are studying Web data management. We assume basic familiarity with the concepts of Web data management, but also provide pointers to sources of information to fill in the background.

Many people have collaborated to shape the technical contents of this book. Our thanks to our colleagues for the wonderful feedback, which helped us to enhance the quality of the manuscript. We also thank the Springer Series on Studies on Computational Intelligence Editorial Team: Prof. Dr. Janusz Kacprzyk, Dr. Thomas Ditzinger and Mr. Holger Schaepe for the wonderful support to publish this book very quickly.

We hope the readers will enjoy the contents and we await for further feedback to further improve the work.

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