Preface

I am pleased to bring you *Web Services Research and Practices*. Web services technology has been widely admitted as the future technology for Internet computing and distributed computing. As the second volume in the IGI Advanced Book Series, this book provides researchers, practitioners, and educators with the most current research results in the field in 10 chapters.

Chapter I is titled “Efficient Encodings for Web Service Messages” by Christian Werner, Carsten Buschmann, and Stefan Fischer. The chapter discusses the overhead of network bandwidth using SOAP for service integration. The authors explore compression strategies through a detailed survey and evaluation of state-of-the-art binary encoding techniques for SOAP. The chapter also introduces an experimental concept for SOAP compression based on differential encoding, which makes use of the commonly available WSDL description of a SOAP Web service.

Chapter II is titled “NAM: A Network Adaptable Middleware to Enhance Response Time of Web Services” by Shahram Ghandeharizadeh, Christos Papadopoulos, Min Cai, Runfang Zhou, and P. Pol. The chapter presents a network adaptable middleware that strikes a compromise between the encoding/decoding and associated overhead of data compression to enhance response time of Web services.

Chapter III is titled “Realizability Analysis of Top-Down Web Service Composition Specifications” by Xiang Fu, Tevfik Bultan, and Jianwen Su. The chapter presents “conversation protocol,” a top-down specification approach to study the realizability problem of conversation protocols.

Chapter IV is titled “Efficient Transport Bindings for Web Service Messages” by Christian Werner, Carsten Buschmann, Tobias Jäcker, and Stefan Fischer. The
chapter introduces PURE, a UDP-based transport binding method that significantly reduces the protocol overhead while featuring low latency. The authors prove the resulting reduction of network traffic, and discuss how the data rate efficiency and latency can be enhanced further by transport-level considerations.

Chapter V is titled “A Framework Supporting Context-Aware Multimedia Web Services Delivery” by Jia Zhang, Liang-Jie Zhang, Francis Quek, and Jen-Yao Chung. The chapter presents a componentization model to support quality of service (QoS)-centered, context-aware multimedia Web services delivery. A multimedia Web service is divided into control flow and data flow, each being delivered via different infrastructures and channels. The authors also propose enhancements to Simple Object Access Protocol (SOAP) and Composite Capability/Preference Profiles (CC/PP) protocols to improve their flexibility to serve multimedia Web services.

Chapter VI is titled “Adaptive Search- and Learning-Based Approaches for Automatic Web Service Composition” by Nikola Milanovic and Miroslaw Malek. The chapter models automatic service composition as a search problem. Basic heuristic search, probabilistic, learning-based, backwards (decomposition), and bidirectional (hybrid) automatic composition mechanisms are presented and compared, and the state space and equality of abstract machines are defined.

Chapter VII is titled “XWRAPComposer: A Multi-Page Data Extraction Service” by Ling Liu, Jianjun Zhang, Wei Han, Calton Pu, James Caverlee, Sungkeun Park, Terence Critchlow, David Buttler, Matthew Coleman, and Lawrence Livermore. The chapter presents XWRAPComposer, a wrapper code generation toolkit built on service-oriented architecture to facilitate semi-automatically generating WSDL-enabled wrapper programs.

Chapter VIII is titled “An SLA-Based Auction Pricing Method Supporting Web Services Provisioning” by Jia Zhang, Ning Zhang, and Liang-Jie Zhang. The chapter presents a formal model for Web services-based auctions. The authors examine the specific features of Web services towards applying auctions and establish a Web services-oriented auction model, focusing on investigating and mathematically proving how service providers can decide different service auction strategies to obtain higher profit. The chapter also proposes to utilize the technique of service level agreement (SLA) documents as resources to deduce service requestors’ preferences.

Chapter IX is titled “Dynamic, Flow Control-Based Information Management for Web Services” by Zahir Tari, Peter Bertok, and Dusan Simic. The chapter presents a model of information flow control using semi-discretionary label structures. A set of rules are identified to increase the flexibility of information flow control, while exploiting labels as a practical component to ensure security control. A centralized model for dynamic label checking is also proposed to theoretically verify the presented model.
Chapter X is titled “Model-Driven Semantic Web Services” by Gerald C. Gannod, John T.E. Timm, and Raynette J. Brodie. The chapter proposes a suite of automated software tools for facilitating the construction of OWL-S specifications. The authors introduce an approach for specifying OWL-S specifications (OWL-S profiles and process models) through the use of model-driven architecture and user interaction to describe OWL-S groundings.

In summary, this book accumulates some of the most recent research results in the field of Web services. Enjoy the reading of the book!

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