Ngoc Thanh Nguyen, Radosław Katarzyniak, and Shyi-Ming Chen (Eds.)

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Preface

Intelligent information and database systems are two closely related and well-established subfields of modern computer science. They focus on the integration of artificial intelligence and classic database technologies in order to create the class of next generation information systems. The major target of this new generation of systems is to provide end-users with intelligent behavior: simple and/or advanced learning, problem solving, uncertain and certain reasoning, self-organization, cooperation, etc. Such intelligent abilities are implemented in classic information systems to make them autonomous and user oriented, in particular when advanced problems of multimedia information and knowledge discovery, access, retrieval and manipulation are to be solved in the context of large, distributed and heterogeneous environments. It means that intelligent knowledge-based information and database systems are used to solve basic problems of large collections management, carry out knowledge discovery from large data collections, reason about information under uncertain conditions, support users in their formulation of complex queries etc.

Topics discussed in this volume include but are not limited to the foundations and principles of data, information, and knowledge models, methodologies for intelligent information and database systems analysis, design, implementation, validation, maintenance and evolution. They cover a relatively broad spectrum of detailed research and design topics: user models, intelligent and cooperative query languages and interfaces, knowledge representation, integration, fusion, interchange and evolution, foundations and principles of data, information, and knowledge management, methodologies for intelligent information systems analysis, design, implementation, validation, maintenance and evolution, intelligent databases, intelligent information retrieval, digital libraries, and networked information retrieval, distributed multimedia and hypermedia information space design, implementation and navigation, multimedia interfaces, machine learning, knowledge discovery, and data mining, uncertainty management and reasoning under uncertainty.

The book consists of extended chapters based on original works presented during a poster session organized within the 2nd Asian Conference on Intelligent Information and Database Systems (24-26 March 2010 in Hue, Vietnam). The book is organized into four parts. The first part is titled Information Retrieval and Management and consists of ten chapters that concentrate on many issues related to the way information can be retrieved and managed in the context of modern distributed and multimedia database systems. The second part of the book is titled Service Composition and User-Centered Approach, and consists of seven papers devoted to user centered information environments design and implementation. In some of these chapters detailed problems of effective autonomous user model creation and automation of the creation of user centered interfaces are discussed.

The third part of the book is titled Data Mining and Knowledge Extraction and consists of eight chapters. In the majority of them their authors present and discuss new developments in data mining strategies and algorithms, and present examples of their application to support effective information retrieval, management and discovery. The fourth part of this volume consists of seven chapters published under one title Computational Intelligence. Their authors show how chosen computational intelligence technologies can be used to solve many optimization problems related to intelligent information retrieval and management.

The editors hope that this book can be useful for graduate and PhD students in computer science as well as for mature academics, researchers and practitioners interested in merging of artificial intelligence technologies and database technologies in order to create new class of intelligent information systems.

We wish to express our great attitude to Prof. Janusz Kacprzyk, the editor of this series, and Dr. Thomas Ditzinger from Springer for their interest and support for our project. Thanks are also due to Dr. Bogdan Trawiński, Dr. Przemysław Kazienko, Prof. Oscar Cordón for their excellent work during the organization of the *Special Session on Multiple Model Approach to Machine Learning* (MMAML 2010 – ACIIDS 2010), and to Prof. Le Thi Hoai An and Prof. Pham Dinh Tao for their effective organization of the *Special Session on Modelling and Optimization Techniques in Information Systems, Database Systems and Industrial Systems* (MOT-ACIIDS 2010).

The last but not least we wish to express our great attitude to all authors who contributed to the content of this volume.

January 2010

Ngoc Thanh Nguyen
Radosław Piotr Katarzyniak
Shyi-Ming Chen

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