
Preface

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Biographical notes: Fadila Bentayeb has been an Associate Professor at the University of Lyon 2, France since 2001. She is a member of the Decision Support Databases research group within the ERIC laboratory. She received her PhD Degree in Computer Science from the University of Orléans, France in 1998. Her current research interests regard database management systems, including the integration of data mining techniques into DBMSs and data warehouse design, with a special interest for schema evolution, XML and complex data warehousing, benchmarking and optimisation techniques.

Omar Boussaïd is full Professor in Computer Science at the School of Economics and Management of the University of Lyon 2, France, since 2008. He received his PhD Degree in Computer Science from the University of Lyon 1, France in 1988. Since 1995, he has been in charge of the Master's degree 'Computer Science Engineering for Decision and Economic Evaluation' at the University of Lyon 2. He is a member of the Decision Support Databases research group within the ERIC laboratory. His main research subjects are data warehousing, multi-dimensional databases and OLAP. His current research concerns complex data warehousing, XML warehousing, data mining-based multidimensional modelling, OLAP and data mining combining, and mining metadata in RDF form.

Jérôme Darmont received his PhD Degree in Computer Science from the University of Clermont-Ferrand II, France in 1999. He was an Associate Professor at the University of Lyon 2, France until 2008, before becoming full Professor. He was also the head of the Decision Support Databases research group within the ERIC laboratory from 2000 to 2008. His current research interests mainly relate to the evaluation and optimisation of database management systems and data warehouses (benchmarking, auto-administration, optimisation techniques ...), but also include XML and complex data warehousing and mining, and medical or health-related applications.

Nouria Harbi is an Associate Professor in Computer Science at the University of Lyon 2, France. She is a member of the Decision Support Databases research group within the ERIC laboratory, and also in charge of an information system security master's course. Her current research interests include complex data warehouse modelling and security.

Sabine Loudcher is an Associate Professor in Computer Science at the Department of Statistics and Computer Science of the University of

Lyon 2, France. She received her PhD Degree in Computer Science from the University of Lyon 1, France in 1996. Since 2000, she has been a member of the Decision Support Databases research group within the ERIC laboratory. Her main research subjects are data mining, multi-dimensional databases, OLAP, and complex data. Since 2003, she has been the Assistant Director of the ERIC laboratory.

The objective of this special instalment of the *International Journal of Biomedical Engineering and Technology* is to present a collection of manuscripts that discuss novel and innovative applications of decision-support technologies, such as data warehousing and data mining, in medicine and biology. In these disciplines, data are nowadays not only numerical or symbolic, but they may be termed *complex*. For instance, the development of electronic health records enables information-based medicine, which requires the analysis of various, heterogeneous data, such as patient records, medical images, biological analysis results, and so on. Moreover, these data are often represented in various formats (databases, texts, images, sounds, videos ...), diversely structured (relational databases, XML documents repository ...), originating from several different sources (distributed databases, the web ...), described through several channels or points of view (radiographies and audio diagnosis of a physician, data expressed in different scales or languages ...), or changing in terms of definition or value (temporal databases, periodical surveys ...).

Managing complex data involves a lot of different issues regarding their structure, storage and analysis. The emphasis of this special issue is on critical issues pertaining to managing, processing and analysing complex data for decision-support. Particular emphasis is put on novel and unique applications in the fields of biology, medicine, and health.

Following our call for paper, we have received 28 submissions from all over the world (Belgium, Brazil, Canada, France, India, Malaysia, Saudi Arabia, Singapore, Thailand, Tunisia, UK, USA). To ensure that this special edition maintains the outstanding scientific quality of the *International Journal of Biomedical Engineering and Technology*, all manuscripts have been subjected to a blind review by at least two independent reviewers (most paper received three reviews). Eight papers have finally been accepted for publication.

We would like to thank the authors for their excellent contributions to this special issue, the reviewers for their comprehensive and constructive comments, and Dr. Nilmini Wickramasinghe, editor in chief of the *International Journal of Biomedical Engineering and Technology*, for inviting us to propose and oversee this special issue.

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