Editorial

David Taniar

Clayton School of Information Technology,
Monash University Clayton, Victoria 3800 Australia
E-mail: David.Taniar@infotech.monash.edu.au
Website: http://users.monash.edu.au/~dtaniar/

Eric Pardede

Department of Computer Science and Computer Engineering,
La Trobe University, Bundoora VIC 3083 Australia
E-mail: E.Pardede@latrobe.edu.au
Website: http://homepage.cs.latrobe.edu.au/ekpardede

Ismail Khalil Ibrahim

Institute of Telecooperation,
Johannes Kepler University Linz,
Altenberger Strasse 69, A-4040 Linz, Austria
E-mail: ismail.khalil-ibrahim@jku.ac.at
Website: www.iiwas.org/ismail/

Biographical notes: David Taniar holds Bachelors (Honours), Masters, and PhD degrees – all in Computer Science/Information Technology, with a particular specialty in Databases. His research now expands to Data Mining, Mobile Information Systems, and Web Technology. He publishes extensively every year. He works at Monash University, Australia. He is a founding Editor-in-Chief of a number of international journals, including *Int. J. Data Warehousing and Mining*, *Int. J. Business Intelligence and Data Mining*, *Mobile Information Systems*, *Journal of Mobile Multimedia*, *Int. J. Web Information Systems*, and *Int. J. Web and Grid Services*. He is also an editorial board member of numerous international journals.

Eric Pardede lectures at the Department of Computer Science and Computer Engineering, La Trobe University, Australia. In the same institution he has received his PhD and Master Degrees. He has published a book and several research papers in international journals and conference proceedings. He has chaired several international conferences and workshops. His current research areas are in XML database, data modelling and query optimisation.

Ismail Khalil Ibrahim is a Senior Researcher and Lecturer at the Institute of Telecooperation at Johannes Kepler University, Linz, Austria. He currently teaches, consults, and conducts research in mobile multimedia, supply chain management, agent technologies, and semantic web. He holds a BSc in Electrical Engineering from the University of Technology, Baghdad, Iraq (1985) and an MSc and PhD (cum laude) in Computer Engineering and Information Systems from Gadjah Mada University, Indonesia (1998 and 2001, respectively).

1 Introduction

The *7th International Conference on Information Integration and Web-based Applications and Services* (iiWAS) was held in September 2005 in Kuala Lumpur, Malaysia. The conference attracted papers from academics and researchers from all over the world. The event was a great success and attracted the highest number of participants in the history of iiWAS.

From amongst the accepted papers, we have invited a few authors to submit their extended versions for this special issue in the *International Journal of Metadata, Semantics and Ontologies*. Submitted papers are reviewed by at least two reviewers and, based on the reviews, two papers were accepted in the special issue.

In addition to the two papers, we also invited additional authors to submit their work. These authors have contributed as authors in a recent book *Web Semantics and Ontologies*. For the journal special issue, they have submitted papers containing their latest research in this area. The papers were also reviewed and, based on the reviews, we accepted five additional papers.

The works presented in these papers are summarised as follows.

2 Ontology matching

In ontology-based networked systems, such as web or P2P-based systems, new concepts and data descriptions are continuously acquired and can be changed in time. In such systems, the ontologies have to be open and distributed. The peers also need appropriate methods and techniques for automatically evolving their ontology knowledge by assimilating new concepts that have been acquired from the network. Castano et al. propose a novel ontology evolution methodology that has the capability to semi-automatically detect ontology changes and to assimilate the current ontology with the new incoming external knowledge at different integration levels.

Ngan et al. propose another ontology matching discussion in their paper. The paper focuses on matching semantic web service requests against semantic web service responses when the requesters and the providers use different ontologies. The motivation is that the current matchmakers are only adequate when the semantic web service requester and provider use the same ontology. This paper proposes a framework for a Multi-Ontology Matchmaker (MOM) engine. It also discusses the algorithms needed in an MOM, including for clustering web services, checking the relationship of two concepts from different ontologies, and computing the semantic similarity of the concepts.

3 Ontology integration

These days, we have to deal with high complexity and large size ontologies. These ontologies can be stored in different locations. The task of extracting sub-ontologies from these large-based ontologies is becoming cumbersome. One solution that has been offered is to use large clusters of computers to tailor these large-based ontologies into required, smaller sub-ontologies. This solution, however, is relatively expensive and thus not viable for many users. Flahive et al. offer an alternative solution by using a semantic grid environment to achieve this task. They propose a Distributed Ontology Framework (DOF) to combine geographically remote resources to perform efficient data processing and tailoring of the large-scale ontologies. This paper proposes a simulation environment that processes workloads of various large-set ontologies. Different experimentations are performed to show the correlation between different parameters in this environment.

In the next paper, Kang and Lau integrate ontology with Case-Based Reasoning (CBR) to develop a web-based student enquiry system. The system is used to assist the administration officers in matching the information given by prospective students with postgraduate degrees offered by a university. The CBR technique is used for the development because it allows learning from past experiences and gaining new knowledge in the form of adapted cases retained in the case repository. However, since the inputted data can be ambiguous due to different education systems and language problems, the authors use the ontology to resolve the problem. Ontology ensures explicit specifications of concept, and definition of terminology can be achieved in the system.

Very similar to the ontology integration problem is the sharing of ontologies in communities. It is motivated by the fact that knowledge creation in many communities is not achieved at the organisational or individual level, but in communities of people who come together with common interest. Therefore, it is crucial to have an effective design to represent and organise the knowledge. Uden et al. in their paper describe the development of metadata and ontology for a Knowledge Management in Organisations (KMO) framework.

4 Ontology modelling

Rifaieh and Benharkat propose a prototype called Enterprise Information System Contextual Ontologies (EISCO). It is used as a suitable global enterprise environment that has ontologies paired up with perspectives or representations (i.e., context). They demonstrate how the contextual ontologies can be well-suited to permit a unifying framework serving as a basis of communication between people and interoperability between systems. EISCO also supports reusability for the ontology and context components between two systems.

The final paper in this special issue also deals with the modelling contextual ontologies. Caliusco et al. propose a tool to include semantic data modelling in information system development. The tool is developed using their Contextual Ontology Modelling Language (C-OML). Using contextual ontology, the task of information semantic definition is user-friendly, especially for people who have no background in semantic modelling techniques.