

EDITORIAL PREFACE

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The first issue of the fifth volume comprises four articles, selected after a careful review process, and is organized as follows.

In the first article, Meroufel and Belalem explain that one of the most popular strategies of fault tolerance is the replication. In this paper, authors propose a new adaptive dynamic replication that combines between a replication based on availability and replication based on popularity. The proposed adaptive dynamic replication uses two types of replicas and two types of placement nodes for the new replicas. In addition to the replication, authors used other strategies such as fault detection, fault prediction, dynamicity management, self-stabilization. These services together are grouped in one fault tolerance box named Collaborative Services for Fault Tolerance (CSFT) that structure them in hierarchical services and organize the relationships between them.

In the second article, Li et al. focus on indentifying and understanding the hidden relationships among drugs, genes, proteins, and diseases as these will expedite the process of drug discovery. In this paper, authors propose an effective methodology to discover drug-related semantic relationships over large-scale distributed web data in medicine, pharmacology

and biotechnology. By utilizing semantic web and distributed system technologies, authors developed a novel hierarchical knowledge abstraction and an efficient relation discovery protocol. The approach facilitates the realization of the full potential of harnessing the collective power and utilization of the drug-related knowledge scattered over the Internet.

In the third article, Cheptsov et al. explain that the “reasoning as a workflow” concept has attracted a lot of attention in the design of new-generation Semantic Web applications, offering a lot of opportunities to improve both flexibility and scalability during the “Big Data” analysis process. Authors introduce a technique for developing service-oriented Semantic Reasoning applications based on the workflow concept. They also present the Large Knowledge Collider - a software platform for developing workflow-based Semantic Web applications, taking advantages of on-demand high performance computing and cloud infrastructures.

In the fourth paper Alam and Raza propose a centralized dynamic load balancing strategy using adaptive thresholds for a multiprocessors system. The scheduler continuously monitors the load on the system and takes corrective measures as the load changes. The threshold

values considered are adaptive in nature and are readjusted to suite the changing load on the system according to the mean of the available load. Effectively, the load is leveraged towards the mean, transferring only the appropriate number of jobs from heavily loaded nodes to lightly loaded nodes. In addition, the threshold values are designed in such a way that the scheduler avoids excessive load balancing. Simulation results reveal the effectiveness of the model under various conditions.

The editor wishes to thank the authors for their contribution to this issue and the reviewers for their useful suggestions and feedback to the authors. I wish readers found this issue useful in their research and academic activity.

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Nik Bessis is currently a Head of Distributed and Intelligent Systems (DISYS) research group, a Professor and a Chair of Computer Science in the School of Computing and Mathematics at University of Derby, UK. He is also an academic member in the Department of Computer Science and Technology at University of Bedfordshire (UK). He obtained a BA (1991) from the TEI of Athens, Greece and completed his MA (1995) and PhD (2002) at De Montfort University (Leicester, UK). His research interest is the analysis, research, and delivery of user-led developments with regard to trust, data integration, annotation, and data push methods and services in distributed environments. These have a particular focus on the study and use of next generation and grid technologies methods for the benefit of various virtual organizational settings. He is involved in and leading a number of funded research and commercial projects in these areas. Prof. Bessis has published over 180 papers, won 3 best paper awards and is the editor of several books and the Editor-in-Chief of the International Journal of Distributed Systems and Technologies (IJDST). In addition, Prof. Bessis is a regular reviewer and has served several times as a keynote speaker, conferences/workshops/track chair, associate editor, session chair and scientific program committee member.