

# Editorial

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CIT. Journal of Computing and Information Technology brings in its third issue five papers from the broad area of computer science research and application. The papers address issues in information risk assessment, cognitive radio networks, parallel architectures for data mining, multi-agent simulation of industrial facilities, and cross-language information retrieval.

In their paper titled *Application of Case-based Methodology for Early Diagnosis of Computer Attacks* Gulnara Yakhyaeva and Olga Yasinskaya describe a novel approach to information risk assessment that differs from traditional methods. Instead of working with numerical estimates of risk probabilities, they use sets of cases on which these risks have worked. Opposite to the standard approach, where information is first digitized (i.e. fuzzificated) and then processed, in their method all available information, including the description of the domain ontology and empirical data, is firstly processed and only then fuzzificated. In such a way relevant data can be processed, which is not yet distorted by digitization, during all stages of information processing.

The paper *Energy Efficiency and Throughput Optimization of Cognitive Relay Networks* by Yao-lian Song, Fan Zhang, Shao Yubin focuses on energy efficiency and throughput maximization of cognitive radio networks through jointly considering the parameters of spectrum sensing time and signal-to-noise ratio (SNR). The authors have established an energy-efficient network model described by two variables, namely, sensing durations and SNR. They have additionally observed that there exist both optimal sensing duration and optimal SNR to achieve the maximum of energy efficiency. They also provide simulation results showing a significant improvement of energy efficiency in the cognitive relay transmission scheme opposed to the direct transmission one.

In the third paper, titled *Frequent Pattern-growth Algorithm on Multi-core CPU and GPU Processors*, Khedija Arour and Amani Belkahla present a hardware-based approach to the problem of discovering association rules among sets of items within data mining. As the first step in this process, namely finding frequent itemsets, i.e. frequent itemset mining (FIM), is computationally the most expensive one, a parallel architecture provides an efficient means for improving its performance. The authors address implementations based on multi-core CPU and on GPU processors as viable FIM algorithm accelerators, specifically targeting the FP-growth algorithm.

The paper *Using of DEVS and MAS Tools for Modeling and Simulation of an Industrial Steam Generator* by Noureddine Seddari, Mohammed Redjimi and Sofiane Boukelkoul focuses on the development of an operational simulator for industrial processes in the hydrocarbons field intended to training beginner operators, workers and new recruits. The authors represent the respective complex system using Ziegler's DEVS (Discrete Event Systems Specification) formalism, subsequently implementing it as a multi-agent system using the multi-agent platform MAD-KIT.

Souheyl Mallat, Mohamed Achraf Ben Mohamed, Emna Hkiri, Anis Zouaghi and Mounir Zrigui study the challenging problem of cross-language information retrieval based on query translation in their paper *Semantic and Contextual Knowledge Representation for Lexical Disambiguation: Case of Arabic-French Query Translation*. They concentrate on Arabic-French information retrieval and show how to improve the performance of the word-by-word query translation by disambiguating the lexical ambiguity using a combination of existing query translation techniques.

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Editor-in-Chief