EDITORIAL

This second issue in Volume 16 of the Computer Science and Information Systems journal consists of nine regular articles and extended versions of five papers selected from the 8th International Conference on Web Intelligence, Mining and Semantics (WIMS) which was held in Novi Sad, Serbia, on June 25–27, 2018. As is customary, we gratefully acknowledge all the hard work and enthusiasm of our authors and reviewers, without whom the current issue would not have been possible.

Before turning to the contents of the issue, we have the pleasure of announcing the new impact factors of ComSIS. The new two-year impact factor for 2018 is 0.620, while the five-year impact factor is 0.742.

The regular article section begins with "Majority Vote Feature Selection Algorithm in Software Fault Prediction" where Emin Borandag et al. tackle the problem of identification and location of defects in software projects by isolating the most influential software metrics using various feature rankers. It experimentally is shown that employing most significant metrics as features enhances defect prediction, i.e. classification performance of multiple machine-learning algorithms.

Jiawei Li et al., in "Goal-oriented Dependency Analysis for Service Identification," explore the important aspect of service-oriented architecture systems – service identification. The article considers dependency analysis in the business process management domain, applying a dependency tree featuring the relationships among requirements. The dependency relations are analyzed to create business processes via scenarios comprising requirements and process fragments.

The article "Intelligent Query Processing in P2P Networks: Semantic Issues and Routing Algorithms," by AL Nicolini et al. surveys and discusses the major algorithms for query routing in unstructured P2P networks in which semantic aspects (e.g. provenance, nodes' history, topic similarity, etc.) play a major role. A general comparative analysis is included, associated with a taxonomy of P2P networks based on their degree of decentralization and the different approaches adopted to exploit the available semantic aspects.

"Dimension Reduction and Classification of Hyperspectral Images based on Neural Network Sensitivity Analysis and Multi-instance Learning," authored by Hui Liu et al., addresses two issues regarding hyperspectral image classification: high dimensionality and identification of objects as either a "different body with the same spectrum" or "same body with a different spectrum," making it difficult to maintain the correct correspondence between ground objects and samples. In this respect, the proposed method combines neural network sensitivity analysis with a multi-instance learning algorithm based on a support vector machine to achieve dimension reduction and accurate classification for hyperspectral images.

In "Density-Based Clustering with Constraints," Piotr Lasek and Jarek Gryz present extensions of classical density-based clustering algorithms, NBC and DBSCAN, allowing specification of instance constraints. Knowledge about anticipated groups can be applied by specifying the so-called must-link and cannot-link relationships between objects or points. Experiments show that instance constraints improve clustering quality with negligible computational overhead related to constraint processing.

Mathias Longo et al., in their article "Reducing energy usage in resource-intensive Java-based scientific applications via micro-benchmark based code refactorings," examine energy efficiency in Java-based high-performance computing for scientific applications. They revisit a catalog of Java primitives commonly used in scientific programming, or micro-benchmarks, to identify energy-friendly versions of the same primitive. The micro-benchmarks are then applied to classical scientific application kernels and machine learning algorithms. Evaluation shows significant reductions of energy usage at both the micro-benchmark and application levels.

"Product Reputation Mining: Bring Informative Review Summaries to Producers and Consumers," authored by Zhehua Piao et al. proposes a novel product reputation mining approach based on three points of view: word, sentence, and aspect levels. Aggregating the three scores, the reputation tendency and preferred intensity are measures, and top-k informative review documents about the product are selected. Their experiments show that the method produces more helpful results than the existing lexicon-based approach.

In their article entitled "A Tripartite-Graph Based Recommendation Framework for Price-Comparison Services," Sang-Chul Lee et al. present a novel application of recommending items to users in price-comparison services. First, it is examined why existing recommendation methods cannot be directly applied to price-comparison services, and then three recommendation strategies are proposed, tailored to price-comparison services: (1) using click-log data to identify users' preferences, (2) grouping similar items together as a user's area of interest, and (3) exploiting the category hierarchy and keyword information of items.

To finalize the regular article section, "Logical Filter Approach for Early Stage Cyber-Attack Detection," by Vacius Jusas et al. considers the problem of early detection of long-lasting cyber attacks, where detailed monitoring of network and system parameters is required to be able to accurately identify the early stages of the attack. The article proposes to consider an attack chain consisting of nine stages, proposing a method to detect early-stage cyber attacks based on attack-chain analysis using hardware implementation of logical filters. Experimental evidence supports the possibility to detect attacks in the early stages.

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