Editorial

The present issue of *CIT*s Vo1. 24 brings seven papers from the fields of networking, mobile agents, data mining and business process modeling.

The issue starts with the paper *Research on Outage Performance Optimization of Cognitive Relay Network with Cooperative Sensing* by Yaolian Song, YuHao Li, Shujuan Wang and Ya Zhang. The authors investigate the outage probability of cognitive relay networks in order to maximize their performance based on sensing time and fusion rule threshold selection. Both theoretical analysis and simulation results show that the outage performance of cognitive relay networks can be significantly improved under the assistance of the authors' cooperative sensing scheme with respect to that of the non-cooperative ones.

In the next paper *Construction of Pipelined Strategic Connected Dominating Set for Mobile Ad Hoc Networks*, Ceronmani Sharmila and George Amalanathan address one of the challenges facing Mobile Ad Hoc Networks (MANET), namely efficient routing between nodes. They base their approach on constructing, in a distributed manner, the minimal Connecting Dominating Set (CDS) of nodes, which acts as a routing virtual backbone, thus increasing the routing performance in terms of CDS size and the average number of hop count per path. Simulation results show that the proposed PipeLined Strategic CDS (PLS-CDS) is more suitable for low mobility networks.

Intrusion detection is a security method used in computer networks to locate and trace potentially dangerous intruders. As there exist issues with traditional models for intrusion detection; Sumaiya Thaseen Ikram and Aswani Kumar Cherukuri propose a novel hybrid integrated intrusion detection model based on the integration of principal component analysis (PCA) and support vector machine (SVM) in their paper titled *Improving Accuracy of Intrusion Detection Model Using PCA and Optimized SVM*. This model builds on the optimization of kernel parameters of the SVM classifier using automatic parameter selection, eventually improving the accuracy of the classifier and reducing the training and testing time.

Aissam Belghiat, Elhillali Kerkouche, Allaoua Chaoui and Mokhtar Beldjehem review the approaches and languages for modeling mobile agent-based systems in the paper *Mobile Agent-Basd Software Systems Modeling Approaches: A Comparative Study*, discussing their strengths and weaknesses. The considered approaches are grouped into three categories: UML-based, formal and hybrid. The authors debate on and compare the main languages and approaches belonging to the above categories with respect to multiple requirements important for mobile agent-based system development, particularly highlighting the UML-based approaches. Besides identifying languages which are most appropriate for mobile-agent development, they also draw attention to their shortcomings along with suggesting certain improvements.

Penguins Search Optimisation Algorithm for Association Rules Mining, by Youcef Gheraibia, Abdelouahab Moussaoui, Youcef Djenouri, Sohag Kabir and Peng Yeng Yin, introduces a new optimization algorithm that shows promise on a variety of different problems. Specifically focusing on one of the most popular and well-known approaches for the decision making process – Association Rules Mining (ARM), they note that the presently known ARM algorithms are time consuming and generate a very large number of association rules, the issue deserving the study of new approaches. Hence, they introduce the Pe-ARM algorithm, which is ARM based on Penguins Search Optimization (PeSOA). The effectiveness of the approach is demonstrated with a number of experiments carried out on different datasets and specifically on the biological ones, showing improvements in both execution time and solution quality over present meta-heuristics ARM algorithms.

Precise rainfall forecasting for meteorological predictions, whose forecasting accuracy is presently still deficient because of complex dynamic parameters involved is the topic of *Identifying Effective Features and Classifiers for Short Term Rainfall Forecast Using Rough Sets Maximum Frequency Weighted Feature Reduction Technique*. Its authors Sudha Mohankumar and Valarmathi Balasubramanian address the identification of significant input for modeling effective rainfall prediction as a weather prediction technique. They examine a number of rough set based feature selection and data mining methods to forecast rainfall, and introduce a novel rough set based Maximum Frequency Weighted (MFW) feature reduction technique for finding an effective feature subset for modelling efficient rainfall forecast systems. The experimental results gathered show substantial improvements of prediction models when trained using the selected feature subset.

The last paper of the issue, titled *Liveness and Reachability Analysis of BPMN Process Models*, by Anass Rachdi, Abdeslam En-Nouaary and Mohamed Dahchour investigates the Business Process Management Notation (BPMN) for documenting and communicating an organization's business process. The authors target BPMN's missing formal semantics by proposing a method to map BPMN to a formal language, which in their approach are Time Petri Nets (TPN). Along with providing the underlying theoretical consideration, they illustrate the approach on a real-life application example.

Vlado Glavinić
Editor-in-Chief