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Editorial

This second issue of *CIT*'s Volume 26 (June 2018) brings five regular papers from the broad areas of computer networks, embedded systems, Web markup languages, and machine learning.

Wireless Body Area Networks (WBAN) are a subclass of sensor networks, finding its use in healthcare applications like monitoring various aspects of a patient's health condition. As the operating frequency band of WBANs overlaps with the 2.4 GHz Industrial Scientific and Medical (ISM) one, interferences are produced, thus causing data losses and quick battery exhaustion. Already known solutions to these problems are costly, complex and of lacking quality. In their paper, titled *Adaptive Parameters Adjustment in WBAN based IEEE 802.15.4 Protocol to Mitigate Wi-Fi Interferences*, Essafi Sarra and Tahar Ezzedine thus propose an alternative method for adaptively adjusting specific parameters (value of packet size, CCA duration and backoff timeslot) in the Medium Access Control (MAC) layer, which is simple, low-cost and dynamic. They provide the related theoretical analysis along with its effectiveness through a set of simulations using the well-known discrete event simulator OMNeT++. The results obtained prove both the reduction of the effects of interferences in WBANs as well as sustainment of quality of service.

In his paper *An Improved Coloured Petri Net Model for Software Component Allocation on Heterogeneous Embedded Systems*, Issam Al-Azzoni addresses the issue of component allocation on heterogeneous embedded systems using Coloured Petri Nets (CPNs), by extending it through the use of CPN Tools in order to efficiently analyze its state space and find optimal allocations. He bases these optimal allocations on available resources of heterogeneous computational units, such as costs of allocations, communication costs, along with additional constraints. The new technique to improve state space generation time by using the branching options supported in CPN Tools is used to significantly cut down the size of the generated state space and thereby reduce the runtime of state space generation, as demonstrated in the evaluation provided.

As the volume of Web XML documents has increased over the years, the need for efficient query processing has become a must. Although a number of labeling schemes have been proposed since, all of them meant to optimize data retrieval and query processing on XML database documents, they mostly support query processing over static XML documents hence requiring re-labeling during dynamic update. In their paper *CBSL − A Compressed Binary String Labeling Scheme for Dynamic Update of XML Documents*, Dhanalekshmi Gopinathan and Krishna Asawa propose a compressed binary string labeling scheme, which recognizes all the structural relationships between the nodes and supports dynamic update of XML documents without re-labeling existing nodes. The advantages of this approach in comparison with other labeling schemes are demonstrated by analytical findings and experiments, which show better results with respect to both label size and label generation time along with update processing.

The current widespread acceptance in various applications of RDF (Resource Description Framework) as a model for representing resources on the Web, has led to an extensive proliferation of RDF data. The authors of the next paper, titled *Transforming XML to RDF(S) with Temporal Information*, Dan Yang and Li Yan study the topic of transforming legacy data resources into RDF data. Specifically, they concentrate on the transformation of temporal XML (eXtensible Markup Language) to temporal RDF data, and propose in their paper a temporal RDF data model that can deal with two major temporal dimensions: valid time and transaction time. In order to automatically construct temporal RDFs with legacy data resources, their paper introduces a novel approach for transforming temporal XML Schema and document into temporal RDF Schema and temporal RDF

triples, respectively. This approach is illustrated by an example and a running prototype system implementation.

The paper *A Framework for Efficient Recognition and Classification of Acute Lymphoblastic Leukemia with a Novel Customized-KNN Classifier* by D. Umamaheswari and S. Geetha proposes a method to segment the nucleus region of white blood cells found in stained blood smear images aiming to efficiently discern acute lymphoblastic leukemia cells from normal cells. The method consists of application of several image preprocessing steps, followed by image segmentation using mathematical morphological operators with Otsu's thresholding, then closing and labeling the region of interest objects in the image, and finally, employing the classification algorithm. For classification purposes, the authors propose a distance-metric modified k-nearest neighbor algorithm, which they name customized k-nearest neighbor algorithm (C-KNN). The results of C-KNN in terms of total classification accuracy are compared with the related work and found to be superior.

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