Editorial

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Biographical notes: Lorna Uden is a Professor Emeritus of IT Systems in the Faculty of Computing, Engineering and Technology at Staffordshire University. Her research interests include technology learning, HCI, big data, mobile learning, activity theory, knowledge management, web engineering, multimedia, e-business, service science and innovation, semantic web, software as a service (SaaS), internet of things and problem-based learning.

Welcome to Vol. 10, No 1 of the journal. This issue consists of three papers. The first paper is, 'Context aware discovery in web data through anomaly detection', by Ruman Tambe, George Karabatis and Vandana P. Janeja. According to these authors, the increase in the amount of data generated by modern technologies and presented on the web has resulted in a growing need for context awareness. Context enables more accurate searches on the web; it provides the boundaries within which we can transition from data to relevant information. The interpretation of data which leads to the extraction of information, changes or varies when the context changes.

This paper applies a context aware process to identify 'interesting discoveries' performed on web data collected from a specific domain. The authors examine data extracted from the web and create a contextual model that seamlessly combines data elements of a domain in order to effectively locate and provide the most appropriate information for the user according to his or her needs. They particularly focus on discovering anomalies, which represent highly unusual data in this contextual web data that may not be clearly evident without context information. Much of this contextual information becomes specialised or tailored to a specific domain or environment.

The paper demonstrates the use of contextual information and semantic techniques with the implementation of a prototype system in the application domain of identifying potential threats associated with cargo shipments from the contextual perspective of relevant US Federal Agencies. The experimental evaluation of their methodology shows that the techniques are promising and they produce better precision results as compared to the scenario when these techniques are not considered. The use of an inference engine for automated generation of rules with varying contexts would be useful.

The second paper is, 'Nested contextualised views in the web of data', by Anastasia Analyti, Carlos V. Damásio and Ioannis Pachoulakis. These authors of this paper defined contexts extending RDF graphs and nesting of contexts leading to contextual structures. They have defined c-RDFS interpretations of contextual structures extending RDFS interpretations. Additionally, they also defined c-RDFS entailment between contextual structures extending RDFS entailment between RDFS graphs. For

each contextual structure CS, a contextual structure cl (CS), called closure of CS, is defined which contains all entailments. Through the notion of closure of a contextual structure, a method for checking (c-RDFS) entailment between contextual structures is defined, which has NP-complete time complexity.

Merging between two contexts c1 and c2 of a contextual structure CS is also defined which incorporates not only the context c2 to c1 but also merges all corresponding sub contexts of c1 and c2. They also formally define a query language, called c-SPARQL, operating on the closure of contextual structure which extends and has the same complexity as SPARQL 1.0 operating on RDF graphs. According to these authors, the goal of extending the RDFS 1.1 model theory to support contexts which are named RDF graphs containing IRIs contextualised within them and other foreign IRIs are satisfied. Literal values are treated in a common way even though they may be contextualised within contexts. Additionally, they have presented an extension of the SPARQL 1.0 query language on contextual structures that is able to query the contents of contexts and navigate within different contexts through references.

The final paper is 'Using variability modelling and design patterns for self-adaptive system engineering: application to smart-home', by Mohamed Lamine Berkane, Lionel Seinturier and Mahmoud Boufaida. According to these authors, adaptability is an increasingly important requirement for many systems, in particular for those that are deployed in dynamically changing environments. The purpose is to let the systems react and adapt autonomously to changing executing conditions without human intervention. Due to the large number of variability decisions (e.g., user needs, environment characteristics) and the current lack of reusable adaptation expertise, it becomes increasingly difficult to build a system that satisfies all the requirements and constraints that might arise during its lifetime.

In this paper, the authors propose an approach for developing policies for self-adaptive systems at multiple levels of abstraction. This approach is the first that allows the combination of variability with feature model and reusability with design pattern into a single solution for product derivation that gives strong support to develop self-adaptive systems in a modular way. They demonstrate the feasibility of the proposed approach with a use case based on a smart home scenario. It would be useful to consider the dynamic variability of self-adaptive systems. This dynamic derivation permits us to define a way to maintain, and update, the state of a product in terms of the features it is supporting during systems execution.