Editorial Preface

Fault Diagnosis in Service Oriented Architecture

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This regular issue of the International Journal of Web Services Research (JWSR) collects five papers. The first paper, entitled *Colored Petri Nets based Fault Diagnosis in Service Oriented Architecture*, aims to resolve the problematic task of diagnosing faults in Service Oriented Architecture (SOA). Guru Prasad Bhandari et al. propose a Color Petri Nets (CPN) based approach to model different faults that may occur at the execution time. Some heuristics are also proposed to diagnose faults from the CPN modeling. The model may be helpful for dependability enhancement of SOA based systems.

The second paper, entitled *Incorporating LDA with Word Embedding for Web Service Clustering*, proposes a novel clustering approach of Web services by incorporating LDA (Latent Dirichlet Allocation) with word embedding. Zhao et al. leverage relevant words obtained using word embedding to improve the performance of Web service clustering. Experiments conducted on a real-world dataset show that the proposed approach can achieve higher clustering performance than several classical clustering approaches.

The third paper, entitled *Web service candidate identification using the firefly algorithm*, aims at improving the performance on identifying Web service candidates in legacy software. Negar Abbasi et al. regard service identification as a search and optimization problem and develop a new firefly algorithm. A filtering method is also developed to remove excess modules from the algorithm outputs. A case study on a legacy flight reservation system demonstrates the high reliability of the outputs given by the proposed method.

The fourth paper, entitled *A Design-time Semi-Automatic Approach for Obfuscating a Business Process Model in a Trusted Multi-Cloud deployment: A Design-Time Approach For BP Obfuscation*, proposes a design-time approach for obfuscating a business process model by splitting its model into a collaboration of business process fragments semantically equivalent to the initial business process. The obtained results show that their algorithm can generate business process fragments with a high obfuscation level, which can contribute to protecting business process know-how when deployed in a multi-cloud context.

The fifth paper, entitled *Scheduling Multi-workflows over Heterogeneous Virtual Machines with a Multi-stage Dynamic Game-Theoretic Approach*, aims to develop a multi-objective scientific workflow scheduling approach based on the dynamic game-theoretic model. The proposed approach is capable of reducing make-spans and cloud cost of scientific workflows while maximizing system fairness regarding workload distribution among heterogeneous cloud virtual machines. Experimental results show that the proposed framework outperforms traditional ones by achieving lower make-spans, lower cost, and better system fairness.

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