

Editorial Preface

Web Services Enabled Blockchain

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This regular issue of the *International Journal of Web Services Research* (JWSR) collects five papers.

In the first article entitled “A Web Application-Based Secured Image Retrieval System With an IoT-Cloud Network,” Shikha et al. focus on developing an efficient system that could be used for secured image searching, indexing, retrieval, and storage. They developed a novel, efficient technique for forming an IoT-cloud-based CBIR system to support smart device users using an encryption technique. Four different types of features, namely color moment (CM), Gray level co-occurrence matrix (GLCM), hybrid of CM with GLCM, and Deep belief network (DBN), have been used for the extraction of image features. A novel DBN has been proposed based on a combination of clustering and similarity-based indexing to maintain an accurate location record of the entire database images.

The second article, entitled “A Novel Reinforcement-Learning-Based Approach to Workflow Scheduling Upon Infrastructure-as-a-Service Clouds,” aims to address the cloud workflow scheduling problem using a reinforcement-learning-based approach. Chen *et al.* proposed a deep-Q-learning-based approach to arrange multi-workflow-based tasks over heterogeneous infrastructural cloud resources. Experimental results indicate that the proposed approach can effectively optimize the performance in terms of workflow completion time and dwell-time of task requesters.

The third article, entitled “Clustering Mashups by Integrating Structural and Semantic Similarities Using Fuzzy AHP,” aims to address one interesting problem in the field of service clustering, i.e., how to utilize both the structural and semantic information in Mashup profiles to guide the Mashup clustering process. Pan *et al.* proposed an approach to organize Mashups into groups, which integrates structural similarity and semantic similarity using fuzzy AHP to measure Mashup similarity and uses a genetic-algorithm-based clustering algorithm to cluster Mashups. The empirical results on a real-world dataset show the effectiveness of the proposed approach.

In the fourth article entitled “Blockchain-Empowered Big Data Sharing for Internet of Things,” Cai et al. build an IoT data sharing ecosystem to meet participants’ interest in a complicated multi-party interactive data sharing while providing secure data control and management. They proposed a Blockchain-empowered data sharing architecture capable of supporting secure data monitoring and manageability and encouraging IoT users to participate in the data sharing by maximizing the overall welfare among multi-parties.

The fifth paper, entitled “Investigation on Blockchain Technology for Web Service Composition: A Case Study,” investigates Blockchain’s applicability for the semantic web service composition process. Sridevi et al. proposed a conceptual architecture and an algorithm for QoS-aware semantic web service composition using Blockchain. The SLAs are managed based on smart contracts using Blockchain. This work supports environments where parties do not need to trust each other. Also, it brings transparency to service provisioning by clearly defining all QoS values in smart contracts.

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IJWSR

Liang-Jie (L.J.) Zhang received his Ph.D. in Pattern Recognition and Intelligent Control from Tsinghua University. Currently, he is the Chief Technology Officer (CTO) and Senior Vice President of Kingdee International Software Group Company Limited. Dr. Zhang has published more than 160 technical papers in journals, book chapters, and conference proceedings. He has 50 granted patents. He was elected as an IEEE Fellow in 2011, and in the same year won the Technical Achievement Award “for pioneering contributions to Application Design Techniques in Services Computing” from the IEEE Computer Society. He has served as the President of Shenzhen Big Data Alliance since 2013. Dr. Zhang is the Editor-in-Chief of the International Journal of Web Services Research (IJWSR).