Guest Editorial Preface

Special Issue of Research Directions for the Internet of Things

Amit Ganatra, Charotar University of Science And Technology, Nadiad, India

Chintan Bhatt, Charotar University of Science And Technology, Anand, India

Dmitry Korzun, Petrozavodsk State University, Petrozavodsk, Russia

The role of emerging Internet of Things (IoT) technologies becomes essential in the development of applied distributed computing systems, architectures, and technologies, which are the major focus of the International Journal of Distributed Systems and Technologies (IJDST). This special issue aims at consideration of some prominent research directions for the Internet of Things in respect to the area of distributed systems and technologies. The humanity knowledge is now being transformed to digital forms. We live in the era of Big Data and we use IoT to effectively exchange the information and derive new knowledge. In the case of Big Data, traditional techniques, methods, and tools of distributed systems and web approaches are insufficient to solve these information exchange and knowledge derivation problems. New approaches are needed, including visual analytics for data mining, social systems with massive participation of people, fog computing as expanding the cloud systems to the Internet edge, smart spaces to surround the users with digital services, and model-driven engineering for automating the IoT application development and deployment.

Soumya Banerjee et al. presented an investigation that how far visual introspection can assist in troubleshooting of the IoT based software bugs? This specific requirement improvises the new idea, where the shape of the plots with actual data can indicate the cause of the error and further, they can be patched considerably if the software repairing strategies are implemented adjudging the visual analytics. It is quite indifferent to analyze faults for existing applications as a variation of topological and practicing parameters take substantial numbers of iterations and observations. Categorically, the present use-case establishes the fact to analyze and infer concerning the shape of the visual plots derived from embedded modules.

Olga Bogoiavlenskaia et al. considered the problem of active control for information-driven service construction when each client can use its own (individual) strategy to (additionally) control ongoing updates in the subscribed information. Five strategies for active control are selected for this study. For some simplified assumptions, analytical estimates are provided. For close-to-real evaluation of the strategies a simulation model is developed, based on which several performance metrics are experimentally evaluated.

Dihia Belkacemi et al. proposed an approach to hybridize two metaheuristics' sets to find good Pareto mapping solutions to optimize the execution time and the energy consumption simultaneously for mapping parallel applications onto a Network on chip (NoC). The undertaken experimental results have shown that the proposed hybrid algorithms give high quality non-dominated mapping solutions in a reasonable runtime.

Anindita Desarkar et al. present a research article which deals with the mechanized segregation of the poor-quality authentic signatures from reliable ones. Machine learning algorithms for outlier handling utilizing clustering, classification and statistical techniques have been implemented in this context. Subsequent performance evaluation after outlier removal reflects improvement of both true positive and true negative recognition rate accuracy. The performance evaluation segregates the good signatures presenting the significant differences between authentication accuracy and forgery accuracy in the context of building a safe, secure and smart society.

Syed Rabiya et al. propose a new technique called Replica Reduced and Energy-based routing protocol (REB) to control the replicas and increase packet delivery ratio in emergency scenarios. Through simulation, this article demonstrates that proposed system increases delivery rate and reduces overhead and energy consumption considerably, resulting in increased life span of the network.

Aouat Asmaa et al. discuss a deployment method and implemented it to automate the process of deploying applications in a cloud environment based on model-driven engineering, to configure and provision applications to be deployed in the cloud.

Chintan Bhatt
Dmitry Korzun
Amit Ganatra
Guest Editors
IJDST