

Guest Editorial Preface

Special Issue on IoT, Fog and Cloud Computing Towards Building Intelligent Systems

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With the immense growth of information, we are embracing the prevalence of ubiquitously connected smart devices, which are now becoming the main factor of computing. The information storage, processing and sharing has moved to sophisticated smart gadgets. “Fog Computing” deals with the platforms that provide compute, storage, and networking services between end devices and traditional computing datacenters. The demand for applications for fog computing are foreseen in areas such as manufacturing, smart cities, connected transportation, smart grids, e-health, and oil and gas. Cloud computing and Internet of Things (IoT) in the current world of smart devices has changed the way of computing, networking and services provided to the users. Even though cloud computing and IoT can provide a scalable solution for deploying and managing applications, it can’t meet the stringent requirements of applications with the present generation of computing devices especially in a mobile environment. Fog computing is proposed to enable computing directly at the edge of the network, which can deliver new applications and services especially for the future of Internet.

The special issue consists of four contributed papers in the emerging areas of fog computing. The first article titled An Analytical Approach for Optimizing the Performance of Hadoop Map Reduce over RoCE explore Hadoop’s MapReduce engine and propose techniques to obtain a higher level of optimization wherein, power consumed, and heat generated is lowered. A pipelined dataflow system is designed in contrast to the existing unregulated “bursty” flow of network traffic with an ability to carry out both Map and Reduce tasks in parallel, and a system which incorporates modern high-performance computing concepts using Remote Direct Memory Access.

The second article titled A Methodical Analysis of Application of Emerging Ubiquitous Computing Technology with Fog Computing and IoT in Diversified Fields: and Challenges of Cloud Computing projects on basic computing theme on application challenges using mobile computing, emergence of fog computing and how more technical challenges were solved using IoT and ubiquitous computing from social, health care and networking point of view.

The third article Efficient Methods towards Effective Data Access on Cloud provides an attempt towards developing time efficient cloud computing architecture, by considering the deficiencies with respect to existing clouds, better ontology based cloud information architecture.

Finally, the fourth article titled Innovative Approaches in Pair Programming to Enhance the Quality of Software Development tries to shed some light on the impact of human psychology on the

effective use of pair programming in the modern Software development lifecycle such as SCRUM, Extreme Programming which are in turn used on heterogeneous software projects.

This special issue is devoted to addressing topics in Fog computing. It covers different aspects of fog computing related to interactions between cloud and fog, data services with fog computing and other research topics. The editorial objective was to enhance and communicate knowledge about the different research areas in fog computing and use of it for individuals, groups, organizations, and communities. We thank all the contributors and reviewers who made this special issue possible.

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