Guest Editorial Preface

Special Issue of Recent Trends on Cloud of Things (CoT) in Edge Computing Paradigms for Energy Domain

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In the era of personal computing, when the processing requirements were sky-rocketed, the rise of cloud computing had begun. Cloud backed IoT has been a buzzing word that helps in intelligent and smart connected with IoT, sensors connected in an internet fashion using cloud. This combination led the cloud with its authoritative and ascendable infrastructure for the real time handling, exploration and loading of IoT data under integrally composite models which supports the IoT devices to get the advantage. In turn IoT offers various rewards like cloud users allowed to build an application on top of IoT where the interconnection of various objects have been maintained by various services provided under cloud.

When the concept of IoT started to grow, lots of sensors were introduced for pervasive and ubiquitous computing. This led to the growth of a wide array of data which was saw an exponential growth. The simplest and the most feasible way for an optimized data processing were to connect these devices to the cloud. For such large data transfer, high speed networks and interconnections were required. To fine-tune and optimize the data that is transferred over the network, after a wide research, it was understood that not all data generated from the sensors have to be stored centrally in cloud.

It would be much efficient to distribute small server in-front of the cloud and closer to the location of the user. This led to the evolution of new computing approach called edge computing which involves pushing the data collection and processing back to end-user devices. Edge computing moves the data storage, computing closer to the edge devices itself instead of a centralized local server. So, the edge devices have become a supreme authority to judge what kind of information to be stored on the edge. There by the edge computing along with CoT brings improves greater scalability, minimum interval and processing speed. The growing request of smarter devices enriches calculating constraint in bulky volume causing in greater energy consumption.

The special issue in *International Journal of Grid and High Performance Computing* (IJGHPC) had received 14 papers. After going through 7 months of review process with several levels of blind review finally 5 papers have been selected for publication.

The first paper that was selected with the title "IoT Solution for Enhancing the Quality of Life of Visual-Impaired People" written by the authors Dr. Siddesh G M and Dr. K G Srinivasa. The main aim of this paper is to design a system of Visually Impaired- Quality of Life (VI-QOL) consists of

Arduino UNO, ultrasonic sensors, proximity sensors and some of the IoT components along with Smartphone. Using these components author's final research goal is to improve the mobility of VI people in a wider range of travel activities. The VI-QOL framework is tested all the consequences of IoT components and the android applications. Total Transaction time for navigation system of the proposed solution is measured with and without any load in the application, which proves the efficiency of the proposed work. The throughput of the proposed solution is proved to be high.

The second paper selected was titled "Communication Trust and Energy-Aware Routing Protocol or WSN Using D-S Theory" written by the authors Dr. Srinivasan Palanisamy, Sankar S, Mr. Ramasubbareddy Somula and Ganesh Gopal Deverajan. The main aim of this paper is to address various security attacks, due to their resource constrained nature of the Wireless sensor networks (WSN). The compromised nodes are used to mislead the sensed data and disrupt communication, which can affect the entire decision making system based on the sensed data. It is also possible to drain the sensor nodes energy and reduce the battery life of the networks. Trust models are the preferred mechanism to secure WSN. In this paper, we present Communication Trust and Energy Aware (CTEA) routing protocol that make use of the proposed trust model to mitigate the effects of badmouth and energy drain attacks. We use Dempster theory to compute communication trust and also consider the energy metric, to establish the route for data transfer. The simulation result shows that the proposed trust model increases the packet delivery ratio, residual energy and network lifetime, by mitigating the nodes misbehaviour in presence of energy drain and bad mouth attacks.

The third paper that was selected is "Analyzing Cognitive Radio Network Operation With the Mechanism of Deciding Handoff and Process of Handoff Employing Varied Distribution Models (5G)" written by the authors Sumathi D and Dr. Manivannan S. S. The highlights of this paper are how Cognitive Radio Networks deal with Sensing, Decision making, Sharing and Mobility. Among these aspects, Spectrum mobility assumes a vital role for spectrum handoff to occur. When the spectrum handoff process is analyzed, there are call drops, spectrum handoff and interferences with the adjacent channels. For minimizing the handoff of the spectrum's probability as well as the call drops, which involves three processes, which are followed in sequential order; results demonstrate a better QoS. In the following three processes, the first process starts with the Markov model, that identifies a channel's states and selects the channel which is apt. The second Process, Multiple Attributes Decision Making (MADM) methods choose one of the best possible channels among all the channels based on various metrics in the proposed hybrid method. In the third process the spectrum handoff is analyzed through different distribution models and to indicate which model is the desirable one for a handoff process such as the one with stationary users or the other with non-stationary users.

The fourth paper was "Game the Oretic Approach for Cloud Service Negotiation" written by Dr. Ramesh C, Santhiya K, Rakesh Kumar S and Dr. Rizwan Patan. The main insight of this paper is to discuss the challenges between Service Consumers (SC) and service providers (SP) in cloud computing. Without proper negotiation between the participants specifying their Quality of service (QoS) requirements, Service Level Agreement (SLA) cannot be achieved. Two strategies that are commonly prevalent in the negotiation process are concession model and trade off model. The concession model assures the Service Consumer (SC) receiving the services on time without any deferment. But service consumer has only limited utility. To balance the utility and achievement rates, we propose a mixed negotiation approach for cloud service negotiation, which is based on "Game of Chicken." Extensive results show that a mixed negotiation approach brings equal amount of satisfaction to both service consumer and service provider in terms of achieving higher utility outperform the concession approach, while taking a fewer time delays than that of a tradeoff approach.

The fifth paper that was selected is "A Novel Architectural Model for Dynamic Updating and Verification of Data Storage in Cloud Environment" written by Dr. Dharmendra Singh Rajput, Dr. Praveen Kumar Reddy M, Ramasubbareddy Somula, Dr. Bharath Bhushan S and Ravi Kumar Poluru. The main aim of the paper is to design an architecture for the data storage in cloud. Due to the rapid increase in technology, many clients want to store multiple copies of same data in multiple data centers.

Clients are outsourcing the data to cloud service providers and enjoying the high quality of service. Cloud service providers (CSP) are going to charge extra amount for storing multiple copies; CSP must provide the firm guarantee for storing multiple copies. This paper proposes a new system model for storing and verifying multiple copies; this model deals with identifying tarnished copies which are transparent for the clients. Also, it deals with dynamic data control in the cloud with optimal results.

After intense review we have found out that these 5 articles were suitable and were ready to be within the scope of the special issue. Since this is a special issue, we didn't accommodate any papers that were away from the scope of the theme and after further scrutinizing and several levels of blind review this has been done. Hope this special issue will gather more citation and improve the impact factor of the journal. We greet the editor in chief and manager publications for giving us an opportunity to do a special issue and further we expect to do more special issue with them. Thank You.

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