Hindawi Publishing Corporation
Mobile Information Systems
Volume 2016, Article ID 9805636, 2 pages
http://dx.doi.org/10.1155/2016/9805636

Hindawi

Editorial

Enabling Technologies towards Next Generation Mobile Systems and Networks

Yeong M. Jang,[1] Juan C. Cano,[2] Kun Yang,[3] and Young-June Choi[4]

[1]*Kookmin University, Seoul, Republic of Korea*
[2]*Universitat Politècnica de Valencia, Valencia, Spain*
[3]*University of Essex, Colchester, UK*
[4]*Ajou University, Suwon, Republic of Korea*

Correspondence should be addressed to Yeong M. Jang; yjang@kookmin.ac.kr

Received 4 December 2016; Accepted 5 December 2016

Mobile services have become an essential part in the era of 5G networks. The mobile system will be based on cloud computing, IoT, user-centric services, and mobile communication. Cloud service is necessary to support mobility and real-time operation, reliable content delivery such as content-centric network, and content delivery networks together with mobile cloud systems. Next generation mobile systems and networks are also facing a huge challenge to handle a large number of IoT devices because in the near future all the devices will be connected with each other. So effective networks and systems are necessary to manage and handle the increasing numbers of devices such as cloud computing, automated network management, new service platforms, and new network architectures (e.g., Software Defined Network (SDN) and Network Function Virtualization (NFV)) towards the promising 5G mobile networks and services.

In this special issue, we have invited a few papers that address such issues. Among them, ten selected papers are addressed to researchers and engineers practicing in the scientific areas for the next generation mobile system and networks.

The paper entitled "An Architecture of IoT Service Delegation and Resource Allocation Based on Collaboration between Fog and Cloud Computing" by A. A. Alsaffar et al. presents an architecture and new algorithm for smart IoT service based on three conditions for managing and delegating user request. They also propose a new technique to take care of fog and cloud environment by allocating resources to ensure QoS and service level agreement (SLA). Their proposed scheme shows improved management, better service delegation, efficient resource allocation, and big data distribution compared to the existing methods.

The paper "Multivariate Multiple Regression Models for a Big Data-Empowered SON Framework in Mobile Wireless Networks" by Y. Shin et al. outlines the background of big data, big data self-organizing networks (BSON) framework, and multiple regression models. The authors propose multivariate multiple regression models for the BSON framework with the implementation using MapReduce.

The paper titled "mCSQAM: Service Quality Assessment Model in Mobile Cloud Services Environment" by Y.-R. Shin and E.-N. Huh proposes an architecture named mCSQAM to determine the quality metrics for limiting the problems of cloud computing. The authors propose an Analytic Hierarchy Process (AHP) method to access the mobile cloud services based on different requirements from the service consumers.

The paper named "Securing SDN Southbound and Data Plane Communication with IBC" by J. Lam et al. presents a distributed SDN secured communication with a multidomain capable Identity-Based Cryptography (IBC) protocol, particularly for the southbound and wireless data plane communication. They also analyzed the TLS-secured Message Queuing Telemetry Transport (MQTT) message exchange protocol to find out the possible bandwidth saved with IBC. The authors argue that this system is easier to use because it ensures higher network performance and lower power

consumption of the IoT devices as well as supporting more IoT devices without upgrading the infrastructure.

The paper "Data-Driven Handover Optimization in Next Generation Mobile Communication Networks" by P.-C. Lin et al. addresses network densification problems (mobility problems) for next generation mobile communication networks due to the increasing network capacity. The authors propose a data-driven handover optimization (DHO) method to mitigate the problems. The DHO approach collects data from mobile communication to form a model through a key performance indicator (KPI). The authors think that the results using the proposed approach could successfully relieve the mobility problems.

The paper named "Hierarchical Brokering with Feedback Control Framework in Mobile Device-Centric Clouds" by C.-L. Chen et al. presents a hierarchical brokering architecture (HiBA) and Mobile Multicloud Networking (MMCN) feedback control framework for next generation device-centric cloud computing with the mathematical analysis for availability and network latency. The authors perform an experiment with HiBA federates heterogeneous mobile and fixed devices in three tiers using different network interfaces. From the results, it shows that the approach is an amended platform for mobile cloud computing and ensures a sensible solution to various services.

The paper titled "SDN Based User-Centric Framework for Heterogeneous Wireless Networks" by Z. Lu et al. designs a new framework for heterogeneous wireless networks with the support of user-centricity to fulfill users' preferences and requirements. Away from the conventional framework SDN based framework provides better performance. As SDN has decoupled data and control plane virtually and logically centralized structure, it is easy to manage the HetNets in an efficient and flexible way. In this paper, the authors also analyze the possible overheads of the user-centric framework such as signaling overhead and control delay.

The paper "Performance Evaluation of Moving Small-Cell Network with Proactive Cache" by Y. M. Kwon et al. presents a moving small-cells (mSCs) network, its architecture, and the proposed proactive caching mechanism. The results confirm that the QoS of moving cell can be improved by using mSCs together with proactive caching which also reduces the wireless backhaul load and increases the overall network capacity. The authors also argue that the overall network performance is highly dependent on the number of mSCs deployed, cache size, and content popularity.

The paper entitled "SmartCop: Enabling Smart Traffic Violations Ticketing in Vehicular Named Data Networks" by S. H. Ahmed et al. addresses a problem of smart traffic violation ticketing (TVT) in Vehicular Ad hoc Networks (VANETs). The existing technologies are not suitable for VANETs as its dependency on named contents instead of host contents. In this paper, the authors propose a smart TVT system for vehicular named data networking termed as SmartCop which helps a cop vehicle (CV) to issue a TVT to the offenders autonomously. They also provide simulated comparison results for messaging delay, ticket issuing delay, and percentage of detection for different vehicles, CVs, and also the vehicles speeds which are being assessed.

The paper entitled "Survey of Promising Technologies for 5G Networks" by N. T. Le et al. provides a comprehensive survey of the promising technologies for 5G networks such as Software Defined Networking (SDN), cloud computing, IoT, and other wireless technologies. They outline the surveys and provide the future research direction of these technologies for 5G networks.

Acknowledgments

We would like to thank the authors who submitted their articles to this issue and the reviewers for providing constructive and timely feedback.

Yeong M. Jang
Juan C. Cano
Kun Yang
Young-June Choi