

Guest Editorial

Selected Papers from BWCCA/3PGCIC 2018

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During the past decades, technologies of mobile Internet, wireless communication and Internet of Things (IoTs) have been dramatically growing. Different kinds of high-tech products are released to the market, consequentially leading us to a new living style. Applications of these technologies such as self-driving vehicles, healthcare monitoring, and live shows are quickly developed everywhere in the world. But these technologies are not completely perfect and mature. Related research has been conducted worldwide. They also pose a much higher security risk than the WiFi and 2G/3G/4G networks did. To safely protect and friendly serve users of these systems, new techniques are required and needed to be emergently developed.

Big data analysis, deep learning and some other AI techniques are considered the best approaches to discover new knowledge and methods for problem solving. Of course, if these techniques are applied to uncover and detect malicious behaviors coming from Internet, the accuracy will be higher than before. Perhaps, new attacks can also be found.

For achieving network slicing, NFV and SDN, OS functions, like process management and scheduling, memory partition, inter-process communication, RPC/RMI and file system have to be modified to make sure tasks of a network slice and virtualized functions can be performed based on ACID principles.

On the other hand, the 13th International Conference on Broad-Band Wireless Computing, Communication and Applications and the 13th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (BWCCA 2018 & 3PGCIC 2018) was held in Taichung, Taiwan on 27-29 July, 2018. They provide a forum for academic and industrial researchers to exchange ideas and experience, and explore new research directions, particularly for studying challenges and solutions of the mentioned systems.

The main goal of this special issue is to provide an opportunity for all practitioners to contribute with their original research and review papers. Outstanding papers have been selected from those accepted by and presented in BWCCA 2018 & 3PGCIC 2018. Each selected paper is substantially extended with at least 40% of difference from its conference version. In this special issue, four high quality papers are selected.

The first, entitled “Joint Sampling Rate and Quantization Rate-Distortion Analysis in 5G Compressive Video Sensing” by Zhu et al., mentioned that compressed video sensing (CVS) will be one of the 5G applications of compressed sensing (CS) to video coding. However, most current studies on CVS focus on random measurements without quantization, thus not suitable for practical applications. Authors then proposed an efficient rate-control scheme combining measurement rate and quantization for residual reconstruction in CVS. A novel distortion model that exhibits the relationship between QD, SR, and QP is also presented. With this model, a rate-distortion (RD) optimized rate allocation algorithm is developed to derive the values of SR and QP that maximize visual quality.

The second, named “Traceable and Private Satellite Communication for Emergency Notification in VANET” by Chen et al., claimed that many research efforts have focused on the issues in Vehicular Ad Hoc Networks (VANETs). Satellite technology is used for reliable emergency notification, aiming to cope with significant accidents or disasters which potentially make traditional roadside radio communication infrastructure unavailable. These transmitted emergency messages are also vulnerable to unauthorized access. This may worsen people’s privacy and message delivery security. Message cryptography can defend against known attacks and solve some security problems such as mutual authentication, confidential communication, etc. The proposed system detects malicious behaviors and prevent a legal registered mobile user from stealing the network control center’s private key to avoid the protected system from insider attacks.

The title of the third is “Intelligent Ocean Convergence Platform Based on IoT Empowered with Edge Computing” by Liang et al.. In this paper, authors considered that ocean is currently crowded with vessels. These vessels and their on-board equipment produce a massive amount of data that can share with others. So they suggested adopting an Intelligent Ocean Convergence Platform, which takes advantages of the novel concepts of the Internet of Things and 5G communications, to support oceanic services. However, the processing activities are sometimes shifted to the edge computers of the network. Authors then propose a

combination of software-defined networking and edge computing, in which software technology supports interoperability of heterogeneous network technologies, and edge computing enables ultra-reliability, scalability, and low latency in ocean networks, attempting to meet the rapid growth of marine vessels' and demand for rapid computing and communication capabilities.

The fourth paper is "An optimal security management framework for backhaul-aware 5G-Vehicle to Everything (V2X)" by Sharma et al.. It presents security management as a principle of sustainability and key-management. The performance tradeoff is evaluated with the key-updates required to maintain a secure connection between the vehicles and the 5G-terminals, aiming at enhancing the security operations between the 5GC and the sub-divided functions at the edge of the network through a dual security management framework. The evaluations are conducted using numerical simulations, which help to understand the impact on the sustainability of connections as well as identification of the fail-safe points for secure and fast operations.

We believe that all papers included in this Special Issue will have a special importance for future scientific research works, and also make the contributions to the studies conducted by other researchers and engineers, who work in advanced mobile security technologies. We would like to express our sincere appreciation of the valuable contributions made by all authors. Our special thanks go to Professor Han-Chieh Chao Editor-in-Chief of the Journal of Internet Technology (JIT), for allowing us to publish this Special Issue, and for his highly supports throughout the entire publication process.

Guest Editors



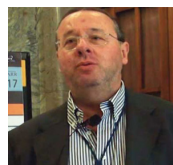
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Leonard Barolli received his B.E. and Ph.D. from the Tirana University, Albania and Yamagata University, Japan, in 1989 and 1997, respectively. He was a JSPS Post Doctor Fellow Researcher and Research Associate at

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