Editorial

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Biographical notes: Fang-Yie Leu received his BS, MS and PhD degrees from National Taiwan University of Science and Technology, Taiwan, in 1983, 1986 and 1991, respectively, and another MS degree from Knowledge Systems Institute, USA in 1990. His research interests include wireless communication, network security, grid applications and Chinese natural language processing. He is currently a Full Professor of Tunghai University, Taiwan, the Director of Database and Network Security Laboratory of the university, the Chair of MCNCS and CWECS workshops, and editorial board member of several international journals. He is also a member of IEEE Computer Society.

Fatos Xhafa holds a PhD in Computer Science from the Department of Languages and Informatic Systems (LSI) of the Technical University of Catalonia (UPC), Barcelona, Spain, where he holds a permanent position of a Professor Titular. He was a Visiting Professor at Birkbeck College, University of London, UK during academic year 2009 to 2010 and Research

Associate at Drexel University, Philadelphia, USA during academic term 2004/2005. He has widely published in peer reviewed international journals, conferences/workshops, book chapters and edited books and proceedings in the field. He has an extensive editorial and reviewing service and is actively participating in the organisation of several international conferences. His research interests include parallel and distributed algorithms, security, optimisation, networking and distributed computing. More information can be found at http://www.lsi.upc.edu/~fatos/.

Aniello Castiglione received his degree and PhD degree from the University of Salerno, Italy, both in Computer Science. He is a reviewer for several international journals (Elsevier, Hindawi, IEEE, Springer, Inderscience, Wiley) and he has been a Programme Chair and member of international conference committees. He acted as a guest editor in several journals and several editorial boards of international journals. He is a member of various associations, including the Association for Computing Machinery, the IEEE Computer Society, the IEEE Communications Society, of GRIN (Gruppo di Informatica) and the International Information System Forensics Association, Italian Chapter (IISFA). He is a Fellow of the Free Software Foundation (FSF) as well as Free Software Foundation Europe (FSFE). For many years, he has been involved in forensic investigations, collaborating with several law enforcement agencies as a consultant. His current research interests include data security, communication networks, digital forensics, computer forensics, security and privacy, and security standards and cryptography.

Yi-Li Huang received his Master degrees from National Central University of Physics, Taiwan, in 1983. His research interests include security of network and wireless communication, solar active-tracking system, pseudo random number generator design and file protection theory. He is currently a Senior Instructor of Tunghai University, Taiwan, and Director of Information Security Laboratory of the university.

Current wireless and sensor network (WSN) computing domains emerge from the integration among wireless networks, sensor networks, and 3G/4G technologies, and so on, aiming to enhance the convenience of our everyday life. Their applications are mostly focusing on the areas of energy saving, mobile communication, computer security, cloud computing and so on. The purpose is to apply these technologies to the real world so as to enrich our daily activities. In fact, recent advances in WSNs have led to a new paradigm of the high-tech society which establishes the connections among users of the same interests to form special groups. Unfortunately, these technologies are not completely mature. They need to be further improved to provide users with high quality of modern communication, facilitate human life and reduce power consumption. Also, new techniques have to be continuously developed and invented to achieve the goal of being a sustainable globe. This special issue looks for significant contributions to the WSNs in theoretical and practical aspects, and also solicits papers on various kinds of technologies in WSNs.

In this special issue, we collected eleven high-quality papers from those submitted to and presented in 3PGCIC 2012 and BWCCA 2012 conferences held at the University of Victoria, November 2012. The first one, ‘Situation evaluate on hierarchical network security based on D-S evidence theory’, combines the existing vulnerability information and threats in service layer by scanning the log files and alarm events collected from sensors to decide the relative weights of the factors used to judge whether there is an

attack. The second, 'Efficient certificate-based verifiable encrypted signature scheme', gives a formal definition of the certificate-based verifiable encrypted signature and its security goal, and constructs a secure certificate-based verifiable encrypted signature scheme to secure a protected system. The third is 'The application of dynamic password technology based on ECC algorithm in mobile payment', which uses a dynamic input method to provide payment password and realise the second encryption for payment password so as to ensure the security of a mobile terminal. The fourth paper, 'An improvement in strong designated verifier signatures', proposes a strong designated verifier signature scheme that possesses an efficient calculation as well as a simple string encoding method for signers based on the difficulty of gap Diffie-Hellman problem. The fifth one, 'A DDoS defence scheme based on two-stage traffic flow control', introduces a distributed defence scheme based on two-stage traffic flow control against DDoS attacks by deploying two kinds of coordinated modules through specific mechanism to protect Internet servers.

In the sixth paper, 'Multi-access mixed cognitive body area network architecture', a novel multi-access mixed cognitive body area network architecture is proposed based on theories of cognitive networks, situational awareness, wireless communication infrastructure and topology control technology, to research this layered scalable wireless BAN cognitive model of wireless network architecture. The seventh paper, 'Adaptive SWE and SNMP-based sensor management for environmental monitoring', presents a sensor web enablement (SWE) and simple network management protocol (SNMP)-based management framework which defines the entity management information base (MIB) of debris-flow sensors, and constructs a tree-based SWE management architecture to monitor environmental disasters. In the eighth paper, 'An energy aware resource allocation for cognitive radio OFDMA systems', a multi-user orthogonal frequency division multiple access (OFDMA) network adaptive resource allocation approach is addressed, in which subcarriers are assigned to a user in a way that ensures better spectrum efficiency and guarantees the allocation of power with quality of service (QoS). The ninth one, 'Multiparty-controlled teleportation with generalised GHZ states in quantum communication network', proposes a multiparty-controlled teleportation (M-CT) scheme for securely teleporting an arbitrary unknown single-qubit state by using generalised Greenberger-Horne-Zeilinger (GHZ) states. When a sender transmits an arbitrary single-qubit state to a distant receiver, it is approved by all N controllers Charlie_i ($i = 1, 2, ..., N$) in a quantum communication network to ensure its accuracy. The tenth paper, 'In-orbit test and error analysis of shaped-reflector antenna pattern via satellite's attitude offset', raises a shaped beam forming principle to test the satellite's shaped-reflector antenna pattern and efficiency in orbit by using the edge of roll-off, side-lobe suppression, weighted region and level fluctuation performances, etc. The last paper, 'Improved local binary pattern with pyramid model and its application in face recognition', proposes an improved local binary pattern with a pyramid model and applies it to face recognition applications. In this paper, a separate output label for each uniform pattern and all non-uniform patterns is reclassified instead of collecting them into a single bin.

Each of the accepted articles has been subject to a rigorous peer review procedure and has been assessed by several independent reviewers. We strongly believe that the papers presented in this special issue make a significant contribution to academic researchers, industry professionals, students, and all interested of this subject readers, working or

wanting to extend their knowledge from the areas of wireless networks, sensor networks, security, advanced cognitive systems, as well as energy saving approach.

We would like to express our sincere appreciation to the all authors for their valuable contributions. Our special thanks go to the editorial board for this special issue and Professor Sudip Misra and Professor Isaac Woungang, Editors-in-Chief of *International Journal of Communication Networks and Distributed Systems*, for the invitation to organise this special issue and their great support throughout the entire publication processes.