Editorial

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Biographical notes: Lingyang Song received the BS in Communication Engineering from Jilin University, China in 2002 and a PhD in Differential Space Time Codes and MIMO from the University of York, UK, in 2007, where he received the K. M. Stott Prize for excellent research. From January to September 2003, he worked as a Software Engineer in Hwasun Tomorrow Technology, Beijing. He worked at Philips Research UK from June to December 2005 as a Research Scientist. He worked as a Postdoctoral Research Fellow at the University of Oslo, Norway, until rejoining Philips Research UK in 2008. He was a Visiting Research Fellow at Harvard University, US and the University of York, UK. From March 2009, he starts working as a Full Professor in Peking University, China. He is Co-inventor of 5 international patents and author or co-author of over 80 journal and conference papers. He received the Best Paper Award in WiCOM, October 2007. Currently, he is on the Editorial Board of *International Journal of Communications, Network and System Sciences* and *International Journal of Smart Homes*, and a guest editor of *Elsevier Computer Communications, Wireless Communications and Mobile Computing* and *EURASIP Journal on Wireless Communications and Networking*. He serves as a Member of Technical Program Committee and Co-chair for several international conferences and workshops. He is a Member of the IEEE and IEEE ComSoc.

Jiming Chen received his BSc and PhD both in Control Science and Engineering from Zhejiang University in 2000 and 2005, respectively. He was a Visiting Scholar at INRIA, NUS. He is an Associate Professor with Institute of Industrial Process Control, and the coordinator of group of Networked Sensing and Control in the State Key laboratory of Industrial Control Technology at Zhejiang University, China. Currently he also is a Visiting Researcher with the Centre for Wireless Communications, Department of Electrical and Computer Engineering, University of Waterloo, Canada. His research interests are estimation and control over sensor network, sensor and actuator network, target tracking in sensor networks and optimisation in mobile sensor network. He has published over 50 peer-reviewed papers. Currently, he serves as an Associate Editor for *International Journal of Communication System* (Wiley), *Ad Hoc & Sensor Wireless Networks*, etc. He also serves as a Guest Editor for *IEEE Transaction on Automatic Control, Wireless*

Communication and Mobile Computing (Wiley), etc. He serves as a General Symposia Co-Chair of ACM IWCMC 2009 and ACM IWCMC 2010, WiCON 2010 MAC track Co-Chair, Chinacom 2010 Publicity Co-Chair, and TPC for IEEE ICDCS 2010, IEEE MASS 2010, IEEE Globecom, IEEE ICC, etc.

Welcome to this Special Issue of *International Journal of Autonomous and Adaptive Communications Systems* (*IJAACS*). The title of this Special Issue literally adopts the theme of the *2009 International Wireless Communications and Mobile Computing Conference* (*IWCMC 2009*) as it attempts to represent the 'best' of *IWCMC 2009* by soliciting high-quality representative research works presented at *IWCMC 2009* for inclusion in this issue via a rigorous selection and review process. The scope covers various aspects of wireless networks, wireless communications and mobile computing in order to create a great opportunity for high impact research from both the mobile communications industry and academia to present and discuss new trends, developments, emerging technologies and new industrial standards. To guarantee the quality, in this Special Issue, we only include seven extended papers selected from the *IWCMC 2009*. A detailed overview of the selected works is given below.

The first paper, 'A novel adaptive FEC and bitrate control in home video transmission over wireless network', presents a video stream algorithm that can make usage of bandwidth more efficiency and also can be adaptive with error modules in wireless environment. To guarantee quality of video streaming when error occurs the retransmission and selection drops method should be present. The receiver decides a scheme in the end of frame and feedback to sender immediately before sender start encode next frame. For the Home Media and algorithm using, MPEG-4 part2 visual video codec is put to use which is the most popular video codec method in these days. A novel video stream algorithm has been proposed that can make usage of bandwidth more efficiency and also can be adaptive with error modules on HMWN.

The second paper 'Dynamic allocation of spectrum resources in heterogeneous networks under interference constraints', proposes a new, cross-layer algorithm that allows a cognitive terminal to share and access to either HSDPA or WiMAX licensed spectrum while giving priority to the primary users. The reported algorithm not only considers the interference caused by the cognitive terminal, but also enhances the achievable throughput of this cognitive terminal. Simulation results show the effectiveness of the proposed spectrum access scheme. Under the proposed scheme, the achievable data rate of the cognitive radio terminal is increased by 30% when compared with that obtained under common access schemes.

While the development of Mobile WiMAX devices is still an ongoing process, complete and accurate simulations become more important in order to study the performance of Mobile WiMAX-based broadband wireless access networks. In the third paper, 'HARQ performance modelling and evaluation of Mobile WiMAX for network simulators', to further improve network simulation models for Mobile WiMAX, the hybrid automatic repeat request (HARQ) mechanism is theoretically modelled and its performance and accuracy are evaluated. This paper presents the design and implementation methodology of the Mobile WiMAX HARQ simulation model in system-level network simulators in order to gain benefits in link quality provided by enabling HARQ. The results show that HARQ achieves higher throughput even at low signal strength, which can be considered as a non-line-of-sight (NLOS) scenario.

The fourth paper, 'Dynamic power budget distribution schemes that optimise connection lifetimes in MANETs', presents new dynamic power control schemes that continuously redistribute a fixed power budget among a set of mobile wireless nodes participating in a multi-hop wireless connection or 'route'. The schemes operate with the objective of maximising the expected lifetime of the connection in the face of node movement. The simulations indicate that the proposed power budget distribution schemes yield significant increases in expected connection lifetimes, even when control traffic overhead is taken into consideration. Delay tolerant networks (DTN) are wireless networks where disconnections may occur frequently due to node mobility, power outages and propagation phenomena. In the fifth paper, 'A novel congestion control strategy in DTN', a novel congestion control strategy is introduced to solve the congestion problem that will occur easily at a node if the buffer of this node is limited under epidemic routing in DTN. The strategy is called N-DC (drop the copying numbers over N). By using simulations based on a random waypoint model, the simulation results proved the improvement of this strategy.

The sixth paper, 'An end-to-end QoS and security joint management for IPTV service delivery', describes the proposed IPTV architecture which is composed of two segments: the core network and the access network. The different mechanisms are presented which allow to manage simultaneously the QoS and the security for the IPTV streams delivered to heterogeneous mobile terminals. Performances evaluation demonstrates the importance of the joint management of security and QoS. The last paper, 'Extending emergency services coverage in cooperative IMS networks', proposes an application level approach to enhance the service coverage and availability of emergency services. Specifically, the paper augments these services with All-IP network infrastructure based on IP Multimedia Subsystem (IMS). Furthermore, the IMS Emergency Services architecture with Cooperative Network technology is integrated to provide ubiquitous emergency services. The prime problems of cooperation are investigated between heterogeneous networks and IMS.

In conclusion, this issue of *IJAACS* offers a ground-breaking view into the recent advances in wireless network, wireless communications and mobile computing. This issue also offers both academic and industry appeal – the former as a basis towards future research directions and the latter towards viable commercial applications. Wireless communications and mobile computing in the longer term will be characterised by their criticalness in consumer, business and government applications, *Connecting the World Wirelessly*.

Finally, we would like to express our gratitude to the Editor-in-Chief of *IJAACS*, Professor Thanos Vasilakos, for his advice, patience and encouragement from the beginning until the final stage. We thank all anonymous reviewers who spent much of their precious time reviewing all the papers. Their timely reviews and comments greatly helped us to select the best papers in this Special Issue. We also thank all authors who have submitted their papers for consideration for this issue. We hope you will enjoy reading the great selection of papers in this issue.