Editorial

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Biographical notes: Lou Wei is currently an Assistant Professor in the Department of Computing, The Hong Kong Polytechnic University, Hong Kong SAR, China. His current research interests are in the areas of wireless ad hoc and sensor networks, mobile computing, and computer networks. He has worked intensively on designing, analysing and evaluating practical algorithms with the theoretical basis, as well as building prototype systems. He received the BE Degree in Electrical Engineering from Tsinghua University, Beijing, China in 1995, the ME Degree in Telecommunications from Beijing University of Posts and Telecommunications, Beijing, China in 1998, and the PhD Degree in Computer Engineering from Florida Atlantic University, Boca Raton, USA in 2004. He is a member of the IEEE Computer Society.

Wireless and mobile networking has been continuously a hot research topic in the past decade of years. Many novel schemes have been proposed in wireless sensor networks, wireless internets, and wireless cellular networks. This special issue on Wireless and Mobile Networking has selected nine papers from all submissions to give a snapshot of the state-of-the-art research in this fast moving area.

The topics of these papers focus on three networking architectures. The first set of papers investigates various issues in wireless sensor networks. The second set explores the mobile internet technologies. The third set addresses the resource allocation problem in wireless cellular networks.

In 'Location discovery for sensor networks with short range beacons', Fang Liu, Xiuzhen Cheng, Dong Hua and Dechang Chen present two time-based positioning schemes, TPSS and extended iTPSS, for sensor networks with short-range beacons. Both schemes have desired features, including high scalability in network size, low communication overhead, no requirement for time synchronisation, etc.

In 'Energy-efficient connected coverage of discrete targets in wireless sensor networks', Mingming Lu, Jie Wu, Mihaela Cardei and Minglu Li aims to maximise network lifetime (in terms of rounds) while maintaining a high Quality of Service (QoS) at each round. They generalises the sleep/active mode by adjusting sensing range to maximise the total number of rounds and propose two distributed solutions to achieve the goal.

In 'A traffic aware, energy-efficient MAC protocol for Wireless Sensor Networks', Haigang Gong, Jiannong Cao, Ming Liu, Lijun Chen and Li Xie propose a Traffic load Adaptive, energy-efficient Medium Access Control protocol (TA-MAC) for wireless sensor networks. The TA-MAC modifies the contention window mechanism of the S-MAC scheme for sensor networks to reduce the collision probability while employing a fast back-off scheme to reduce the time for idle listening during back-off procedure, which both reduce the energy consumption.

In 'Semantic Sensor Net: an extensible framework', Lionel M. Ni, Yanmin Zhu, Jian Ma, Qiong Luo, Yunhao Liu, S.C. Cheung, Qiang Yang, Minglu Li and Min-you Wu propose a Semantic Sensor Net (SSN) which enables dynamic tagging of semantic information to sensory data to allow more efficient and systematic monitoring and handling of the environmental dynamics to provide demanded services. In SSN, semantics exists in different levels of designs of WSN, effectively enabling the integration, exchange, and reuse of sensory data across various applications. They can help better decision making in various designs of sensor networks.

In 'A Power-Saving algorithm combining power management and power control for multihop IEEE 802.11 ad hoc networks', Ming Liu and Ming T. Liu focus on closely integrating power control with IEEE 802.11 power management to maximise energy conservation in a realistic setting and propose an algorithm combining and balancing the two different approaches to take advantages from both.

In 'Sensor network configuration under physical attacks', Xun Wang, Wenjun Gu, Kurt Schosek, Sriram Chellappan and Dong Xuan study the impacts of physical attacks on sensor network configuration. They define a practical lifetime problem in sensor networks under a representative physical attack model and develop an analytical approach to meet lifetime requirement under such attacks.

In 'A novel dual-key management protocol based on a hierarchical multicast infrastructure in mobile internet', Jiannong Cao, Lin Liao, Guojun Wang, Hao Ma and Bin Xiao describe a secure multicast infrastructure for large-scale group communication in mobile Internet and propose a key management protocol based on the hierarchical infrastructure to reduce the re-keying overhead and to simplify the relationships between key servers.

In 'The impact of mobility models on mobile IP multicast research', Ming-wei Xu, Qian Wu, Guo-liang Xie and You-jian Zhao investigate the impact of different mobility models on the performance of mobile IP multicast protocols and analyses the key mobility metrics for these models.

In 'Analysis of channel allocation scheme for wireless cellular networks', Wenfeng Du, Weijia Jia, Guojun Wang and Wenyan Lu study the channel allocation problem and propose three system models based on a two-dimensional Markov chain to analyse the performance of cellular networks.

Bear in mind that this special issue provides only a piece of snapshot of the fascinating wireless and mobile networking research. It cannot, and should not, cover all interested topics in this area. As a record of what has been done in recent wireless and mobile networking research, we sincerely hope that this special issue can bring more people into this research community either in studying prior arts, evaluating current solutions, or exploring further issues in the field.

As a guest editor, I had received a lot of support from many scholars when I was working on this special issue. I would like to take this opportunity to thank all the authors for sharing their ideas with the whole community. I would also like to thank all reviewers for providing constructive review comments for these papers. Last but not the least, I would also like to express my special gratitude to *IJAHUC* and the Inderscience Publishers for providing this platform for the publication of this special issue.