Editorial

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Biographical notes: Wenyuan Xu received her BS in Electrical Engineering with the highest honour from Zhejiang University in 1998, MS in Computer Science and Engineering from Zhejiang University in 2001, and the PhD in Electrical and Computer Engineering from Rutgers University in 2007. She is currently an Assistant Professor in the Department of Computer Science and Engineering, University of South Carolina. Her research interests include wireless networking, network security and privacy. She is a co-author of the book *Securing Emerging Wireless Systems: Lower-layer Approaches*, Springer, 2009. She received an NSF Career Award in 2009. She is a member of the ACM and IEEE, and N^2 Women Community, and has served on the technical programs for several IEEE/ACM conferences on wireless networking and its security.

As we progress towards the Generation C where 'the community is connected through context-aware content', the underlying communication technologies should support this trend efficiently. Already, wired networks have responded well to the needs of Generation C, but not wireless networks. As advances in pervasive computing, wireless communication and sensor networks continue, real time information availability, ubiquitous connectivity and convergence can enable new applications that are context aware and provide valuable services to the community.

To identify new applications, fundamental issues and potential solutions of Generation C wireless networks, Gen*C*WiNets'08 (the first workshop on Generation C wireless networks) was held in conjunction with IEEE IPCCC (*International Performance Computing and Communications Conference*), in Austin, TX, 2008. Held at the same venue, WIDA'08(the first workshop on information and data assurance) aimed to address issues associated with information assurance. This Special Issue includes five extended versions of papers selected from those two workshops.

The first paper 'Data filtering and dynamic sensing for continuous monitoring in wireless sensor networks' addresses the issue of data sample rates in sensor networks. The authors argue that fixing sensing frequencies can lead to mismatch between sample rates and event change rates, and thus may result in large amount of unnecessary redundant data readings or insufficient sensing readings. To address this issue, an adaptive sensing frequency adjusting scheme is presented along with its simulation results.

The second paper 'An S2P-based resource discovery mechanism for tuple-based pervasive systems' deals with efficient resource discovery in tuple-based pervasive computing systems, where a tuple represents a piece of resource. The existing mechanism to discover resources relies on broadcast, which imposes heavy communication overhead

to the network. To achieve efficiency, the authors present a strategy that restricts resource requests to a limited number of social peers, mimicking how people interact in the society to find resources.

The focus of the third paper 'Exploring load balancing in heterogeneous networks by rate distribution' is on maximising the throughput in heterogeneous wireless networks (HWN), where WiFi, UMTS, WiMax, and etc., may be available to users simultaneously. Allocating traffic in HWN to different networks is typically done by access points (APs) based on the similarity of the traffic. In the paper, the authors model the load balancing as an optimisation problem across multiple networks, and provide methods to obtain optical rate distribution among different networks. The proposed methods are shown to achieve higher performance compared to the traditional similarity-based traffic grouping methods.

The fourth paper 'Universal classifier and synchroniser' considers one basic building block for dynamic spectrum access e.g., obtaining parameters of an incoming signal without any prior knowledge to facilitate physical layer demodulation. The authors describe their self-contained system that can classify and synchronise with a signal along with their implementation on the software defined radio platform, which consists of GNU radio and a universal software radio peripheral (USRP).

Finally, the fifth paper 'A comparison of keying methods in the Hubenko architecture as applied to wireless sensor networks' covers multiple rekey protocols in wireless sensor networks that adopt Hubenko architecture. The authors evaluate the performance of three rekeying protocols, pair-wise, hierarchical, and secure lock in various scenarios using Matlab simulation, and identify scenarios where each rekeying protocol performs best.

While concluding, we would like to thank the Editor-in-Chief, Thanos Vasilakos, for his help, the reviewers for their insightful comments that helped to enhance the quality of the papers, and the authors for submitting extended and improved versions of their workshop papers for publication in this Special Issue.