Editorial

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Biographical notes: Lu Yan is a research fellow at the University College London. He was with the University of Cambridge Computer Laboratory, Department of Information Technologies in Åbo Akademi, Distributed Systems Design Laboratory in Turku Centre for Computer Science, and Institute of Microelectronics in Peking University. He is also an Adjunct Professor at École Supérieure d'Ingénieurs généralistes and École Supérieure de Commerce de Rouen. His recent interests lie in the fields of ubiquitous computing and large-scale distributed systems.

Sherali Zeadally received the BA and MA Degrees in Computer Science from the University of Cambridge, England, and his Doctoral Degree in Computer Science from the University of Buckingham, England, in 1996. He is an Associate Professor in the Department of Computer Science and Information Technology at the University of the District of Columbia, Washington DC. He is a fellow of the British Computer Society (FBCS) and a fellow of the Institution of Electrical Engineers (FIEE), UK. His research interests include computer networks (wired, wireless), mobile computing, network and system security, and ubiquitous computing.

Historically, ubiquitous systems have been highly engineered to perform a particular task, with no spontaneous interactions among devices. Advances in wireless communications, mobile computing sensor, and actuator technologies have given rise to a whole range of ubiquitous systems. Such systems are increasingly being characterised as self-organising, critically resource constrained, and network centric. The emergence of powerful small, multi-purpose devices capable of operating collectively, rather than as standalone devices, form a dynamic ambient network that connects each device to more powerful networks and processing resources. Such high network access and connectivity lead to a highly dynamic, global computing environment which enables users to communicate with each other and access services anywhere, anytime regardless of geographic location.

We continue to experience a rapid growth in the development of networking technologies aimed at enabling ad hoc and ubiquitous computing. Many novel architectures, protocols, algorithms, and applications have been proposed, implemented, and evaluated. The issues and challenges for the development of such technologies encompass not only a broad spectrum of research topics but also involve new multi-disciplinary applications that will change the way we live and work. The goal of this special issue is to bring to the attention of the readers some the latest technical developments and state-of-the-art research results in the fast moving field of ubiquitous computing. For this special issue, we are pleased to offer this great selection of papers that focus primarily on networking solutions that are being researched and deployed to enable ubiquitous computing.

In 'Adaptive router promotion and group forming in ad-hoc networks', Yoshida et al. propose an adaptive routing system for ad-hoc networks. This system starts off as a reactive protocol, but when the network conditions become unsuitable for the protocol, the system changes its routing strategy with a router-node, or a pseudo cluster-head in cluster-based routing.

In 'Noise-Referred Energy-Proportional Routing with Packet Length Adaptation for clustered sensor networks', Chen et al. study the maximisation of throughput and energy utilisation in noisy wireless channels by cooperation of Energy-Proportional Routing (EPR) and Packet Length Adaptation (PLA). The cooperation of PLA with the EPR algorithm successfully increases throughput and energy utilisation of clustered sensor networks.

In 'An agent-based architecture for fast context transfers during handoffs', Siddiqui and Zeadally propose a novel agent-based context transfer approach to minimise handoff delays for mobile computing applications. Their empirical results demonstrate significant performance improvements over conventional context-transfer approaches.

In 'On designing peer-to-peer systems over wireless networks', Yan and Zhou study the performance issues of

peer-to-peer systems over wireless networks, and provide some useful guidelines for mobile operators, value-added service providers and application developers to design and dimension those systems.

In 'Analysis models for unguided search in unstructured P2P networks', Wu and Kshemkalyani study random walk and flooding mechanisms for blind search in unstructured peer-to-peer overlays, and presents two models: the algebraic model and the combinatorial model are used to analyse node coverage in random graph overlays.

In 'Adapting pervasive systems to multi-user privacy requirements', Ortmann et al. propose a privacy management architecture that allows a user to configure a pervasive environment based on his or her privacy requirements. They validate the feasibility of their proposed approach through a simulated environment which demonstrates automatic adaptation of the pervasive environment when user requirements and user locations change.

We thank all authors for their outstanding contributions. We selected six papers for inclusion in this special issue. These accepted contributions came from different parts of the world including: USA (2), England (1), Germany (1), Taiwan (1), China (1), and Japan (1).

We would also like to thank Professor Yuh-Shyan Chen, the Editor-in-Chief of the *International Journal of Ad Hoc and Ubiquitous Computing* for his kind encouragements and invaluable support during the preparation of this special issue. We express our deepest gratitude to all the anonymous reviewers who devoted much of their precious time reviewing all the papers. Their timely reviews greatly helped us select the best papers included in this special issue.

Finally, we hope you will enjoy reading this selection of papers as we did and you will find this issue informative and helpful in keeping yourselves up-to-date in the fast changing field of ad hoc and ubiquitous computing.