Editorial

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Biographical notes: Weirong Liu received his BS and MS degrees in the School of Information Science and Engineering, Central South University, and received his PhD degree in the Laboratory of Complex Systems and Intelligence Science, Institute of Automation, Chinese Academy of Sciences. Currently, he is an Associate Professor of the School of Information Science and Engineering, Central South University. His special fields of interest include internet of things, wireless sensor networks, cooperative communication, embedded systems, nonlinear control and cooperative control.

Gregorio Martinez Perez is a Full Professor in the Department of Information and Communications Engineering of the University of Murcia, Spain. His research interests include security and management of distributed communication networks. He received his PhD in Computer Science from the University of Murcia. He has published more than a hundred journal articles and conference papers. He has been involved as collaborator or supervisor in several open-source software projects. He is also on the editorial or review board of more than 20 international journals and is involved in several national and European research projects.

Embedded and ubiquitous computing is an exciting paradigm that promises to provide computing and communication services to the end users all the time and everywhere. Its systems are now invading in every aspect of our daily life and promise to revolutionise our existence much more profoundly than elevators, electric motors or even personal computer evolution ever did. The emergence of this technology is a natural outcome of research and technological advances in a variety of areas including embedded systems, pervasive computing and communications, wireless networks, mobile computing, distributed computing and agent technologies. The special issue on *embedded and ubiquitous computing* is intended to provide a forum for presenting, exchanging and discussing recent advances in different aspects of embedded and ubiquitous computing. Through a rigorous double-blind review process, 11 distinguished and innovative papers are selected prudently by reviewers and editors for publication in this issue.

The first paper, 'Multicast tree construction: a nodes' relative leaving probability algorithm based on NICE in ALM', proposes a new application layer multicast algorithm called NRLP-NICE. By introducing the relative leaving probability of the nodes, NRLP-NICE intends to reduce the control costs and average delay error percentage.

The second paper, 'Heterogeneous educational resource recommender system based on user preferences', presents a heterogeneous educational recommender system based on user preferences. The system recommends the latest trends to the user and learns from his behaviour when the preferences are not set. The heterogeneous resource recommendation can leverage users in finding different types of completely relevant useful resources quickly, thus helping to increase user's productivity.

The third paper, 'Hierarchical routing algorithm for ad hoc networks using mobile VMN', proposes a hierarchical routing algorithm called HRA-VMN for large-scale wireless mobile network based on virtual mobile nodes (VMN), in which the optimal path can be quickly found in the different VMN domains and between any two nodes in the VMN domain boundary. By using a hierarchical approach, the proposed algorithm improves the performance on VMN failure and VMN message delivery.

The fourth paper, 'ROI extraction based on visual salience and visual evaluation', proposes two regions of interest (ROI) extraction algorithms respectively based on salient points and saliency regions to get more accuracy. The former one is applicable to extract simple images and has less runtime, and the latter one is applicable to extract colourful and complex image. Even in some ROI extraction, the two algorithms can be combined to increase the performance.

In the fifth paper, 'CH-CSMA/CA: a MAC protocol for asynchronous channel hopping rendezvous in 802.11 DCF-based cognitive radio networks', the authors propose a MAC protocol named CH-CSMA/CA to work with existing asynchronous channel hopping rendezvous schemes by tailoring mechanisms of 802.11 DFC to the slotted operation manner, and design an enhanced virtual carrier sensing mechanism to alleviate its impact on networking performance.

The sixth paper, 'Wake-up radio implementation for internet of things', presents a solution for applying IETF standard protocols to the wake-up radio equipped sensor network to enable an IoT service network. The complete wake-up radio equipped system can inspect the energy consumption and the response time of the nodes.

The seventh paper, 'Performance analysis of a hierarchical switched network architecture', proposes an original hierarchical switched network architecture named HSNet with the new address structure, hierarchical switching and controlling protocols. And a per-flow load-balancing algorithm is proposed to effectively balance the load on the network channels for HSNet.

The eighth paper, 'Towards connectivity-aware deployment and adjustment for roadside units', presents a roadside unit (RSU) deployment and adjustment approach called Volans for the points of interest (POI)-related applications in urban scenarios. Volans adopts stepwise and greedy strategies to solve the RSU layouts.

The ninth paper, 'A hash-based algorithm for measuring cardinality distribution in network traffic', proposes a hash-based algorithm for measuring the host cardinality distribution. Combining with hash, Bloom filter, and data stream algorithm, the space and time consumption of the algorithm are very small, so it can be used to estimate the host cardinality distribution in high-speed networks.

The tenth paper, 'A TCP-friendly AQM algorithm to mitigate low-rate DDoS attacks', proposes a TCP-friendly active queue management (AQM) algorithm, named fair robust random early detection (FRRED), to improve the performance in terms of throughput and fairness. The key idea of it is the 'protocol-based hash partitioning' which segregates the records of UDP and TCP flows maintained at the first level of the counting bloom filter so that the TCP flow information at the first level will not be polluted by the UDP-based attacking flows.

The last paper, 'Formal framework for defining trust in multi-organisation environment', extends the classical framework organisation-based access control (ORBAC), adapted to multi-organisation environment by adding trust information. A theoretical framework is presented to represent trust among organisations and users in the system. The new approach also permits to integrate trust into ORBAC policy.

The editors would like to thank Professor Thanos Vasilakos, the Editor-in-Chief of the journal for the invitation to organise this special issue, and for his assistance in all stages of the editorial process in making this publication possible. It is also with gratitude that the editors wish to acknowledge and thank all the reviewers for their constructive comments, as well as the authors who submitted their precious research works to this special issue.