Editorial

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Biographical notes: Dr. Taeshik Shon received his PhD degree in Information Security from Korea University, Seoul, Korea and his MS and BS degree in Computer Engineering from Ajou University, Suwon, Korea. While he was working toward his PhD degree, he was awarded a KOSEF scholarship to be a research scholar in the Digital Technology Centre, University of Minnesota, Minneapolis, USA, from February 2004 to February 2005. From Aug. 2005 to Feb. 2011, Dr. Shon had been a senior engineer in the Convergence S/W Lab, DMC R&D Centre of Samsung Electronics Co., Ltd. He is currently a professor at the Division of Information and Computer Engineering, College of Information Technology, Ajou University, Korea.

Prof. Stefanos Gritzalis is a Professor at the Department of Information and Communication Systems Engineering, University of the Aegean, Greece and the Director of the Laboratory of Information and Communication Systems Security (Info-Sec-Lab). He holds a BSc in Physics, an MSc in Electronic Automation and a PhD in Information and Communications Security from the Dept. of Informatics and Telecommunications, University of Athens, Greece. He has been involved in several national and EU funded R&D projects. His published scientific work includes 30 books or book chapters, 100 journals and 130 international refereed conference and workshop papers. The focus of these publications is on Information and Communications Security and Privacy.

Hamid R. Arabnia is an author, editor of research books, educator and researcher. He received a PhD degree in Computer Science from the University of Kent (Canterbury, England) in 1987. In 1987, he worked as a Consultant for Caplin Cybernetics Corporation (London, England), where he helped in the design of a number of image processing algorithms that were targeted at a particular parallel machine architecture. Arabnia is currently a Full Professor of Computer Science at University of Georgia (Georgia, USA), where he has been since October 1987. His research interests include Parallel and distributed processing techniques and algorithms, interconnection networks and applications (in particular, in image processing and other computational intensive problems).

Due to the heterogeneous characteristics of ubiquitous networks and wireless communications, various breakthrough items including energy-efficient, energy harvesting, and cross layer techniques used in networking and computing have recently received considerable attention. To enable ubiquitous networks and wireless communications, it is necessary to integrate advanced technologies and theories, many of which are highly heterogeneous, from various fields including pervasive computing, ubiquitous networking, and wireless communications. Many enabling ubiquitous networks and wireless communication technologies continue to be deployed in various computing environments.

We invited six excellent articles related to this special issue.

In "Load Balancing and Adaptive Scheduling for Data Intensive Prioritised Traffic in Multi- Radio Multi-Channel Wireless Mesh Networks", Naveen Chilamkurti and Neeraj

Kumar proposed a Load Balancing and Adaptive Scheduling (LBAS) algorithm for Data Intensive Prioritised Traffic in WMNs. To schedule the incoming traffic, the available capacity (AC) and Load Index (LI) of each link is calculated. A new cost evaluation function (CEF) is defined based upon the values of AC and LI. Each traffic flow is also associated with rate index (RI) and delay estimation (DE). Each link has lower and upper bounds on AC and as soon as the load on a particular link crosses these bounds, the load is transferred to another link dynamically at run time. Higher priority traffic will be assigned to the link having high value of AC to minimise DE and simultaneously a matrix for LI is also constructed. This matrix is used to keep track of the system load at run time so that scheduling can be done for the incoming traffic in prioritised manner based upon the values of AC and LI. The performance of the proposed algorithm is evaluated using simulations on ns-2 with respect to various metrics. The results obtained show that the proposed algorithm is quite effective for balancing the load of multiclass traffic flows.

In the paper entitled "Relative Velocity Based Vehicle-to-Vehicle Routing Protocol over Ad-Hoc Networks", Won-Il Lee, Yang-Sun Lee, Sang-Woong Lee and Jae-Young Pyun proposed a new routing protocol supporting high mobility over VANET which is using hopcounts and relative velocity between vehicles to find the best routing transmission path. By exchanging vehicles' relative velocities, the more stable and reliable paths are searched as compared to traditional MANET protocols using only hopcount information at the time of routing path set-up. To evaluate proposed routing protocol, they compared it with original ad hoc on-demand multipath distance vector (AOMDV) on NS2. The simulation results showed that proposed routing protocol achieves better performance from about 10% to 50% in terms of normalised routing overhead and packet delivery ratio, when video sequences are transferred on channels. The proposed routing protocol can be useful for the vehicle-to-vehicle (V2V) transmission of traffic monitoring data, audio and video streaming services without the additional global position devices.

In "An Efficient Privacy Preserving Pub-Sub System for Ubiquitous Computing", Yuan Tian, Biao Song, Eui-Nam Huh proposed privacy-aware Pub/Sub middleware, which provides high performance and scalability with parameterised and prioritised attributes. It is able to provide fast and dynamic privacy management with low extra overhead.

In "Mobile Node Authentication using Key Distribution Scheme in Wireless Sensor Networks", Shaila K, S H Manjula, Venugopal K R and L M Patnaik proved a novel algorithm that provides robust and secure communication channel in WSNs. Their Double Encryption with Validation Time(DEV) using Key Management Protocol algorithm works on the basis of timed sessions within which a secure secret key remains valid. A mobile node is used to bootstrap and exchange secure keys among communicating pairs of nodes. Analysis and simulation results show that the performance of the Double Encryption with Validation Time (DEV) using Key Management Protocol Algorithm is better than the SEV scheme and other related work.

In the paper entitled "EDR: Efficient Data Routing in Wireless Sensor Networks", Shukor Abd Razak, Yahaya Coulibaly, Abdul Hanan Abdullah, Mohammad Hossein Anisi proposed a data routing scheme which ensures increased network lifetime by exploiting energy efficiently, supporting reliability, fast delivery of delay-sensitive data and achieving low-cost sensor design. Simulation results demonstrate that the proposed routing scheme outperforms related existing approaches in terms of all the evaluation metrics such as packet delivery ratio, energy efficiency and timely delivery of data.

In "Data-Aggregation and Pipelining Scheduling Protocols for Real-Time Wireless Sensor Networks", Sofiane Ouni made mathematical formulation to determine communication response time and to predict the respect of real-time constraints particularly deadline on communication delay. Their simulations outperform the efficiency of their approach to comprise between communication delay and energy consumption constraints.