Special Issue on Selected Best Papers of the International Conference on Information and Communication Systems (ICICS'12)

Guest Editorial

The International Conference on Information and Communications Systems (ICICS2012) is a forum for Industry Professionals and Academics from Companies, Governmental Agencies, and Universities around the world to present their latest research results, ideas, developments and applications in all areas of Computer and Information Sciences. The topics that have been covered in the ICICS2012 include, but are not limited to: Artificial Intelligence, Mobile Computing, Networking, Information Security and Cryptography, Intrusion Detection and Computer Forensics, Web Content Mining, Bioinformatics and IT Applications, Database Technology, Systems Integration, Information Systems Analysis and Specification, Telecommunications, and Human-computer Interaction. We selected 9 high quality papers (out of 70 papers, which were submitted at the ICICS2012) and invited the authors of the selected papers to extend them and submit them for a complete new peer-review for consideration in this Special Issue (SI). The final decision for the inclusion in the SI has been strictly based on the outcome of the review process, where 7 papers out of 9 where accepted. The main objective of the SI is to make available the latest results in the field to the research community and report state-of-the-art and in-progress research on all aspects of information and communication systems. The selected papers span a broad range on the information retrieval, E-business and Internet. The contributions of these papers are outlined below.

Mattos et. al, have studied the virtual network performance evaluation for future internet architectures. A new Internet model, called Future Internet that enables core innovation is proposed. They evaluate the performance of three widespread virtualization tools, Xen, VMware and OpenVZ by considering their use for router virtualization. Experiments with benchmarking tools is conducted to measure the overhead introduced by virtualization in terms of memory, processor, network, and disk performance of virtual routers running on commodity hardware. Their results show that Xen best fits virtual router requirements and fairly shares the network access among virtual routers. On the other hand, Quwaider et. al, proposed conversation monitoring via low-cost speaker diarization using wearable wireless sensors. In this paper speaker diarization is used for identifying speaking sequence and duration for all individuals engaged in a conversation session. The key advantage of the proposed mechanisms is their ability to monitor human conversation without having to perform energy- and processing-expensive speaker identification algorithms. A prototype system was constructed for experimental acoustic diarization using low-cost and low-resolution wearable sensors. It was shown that comparator-based diarization mechanism is able to consistently deliver significantly better acoustic detection performance than threshold-based mechanism in a more distance and noise independent manner.

Next, a framework as generic for collecting and mining client paradata for web applications has been introduced by Khasawneh et. al. The goal of this framework is to track and collect user interactions with dynamic webpages. Using the AJAX, PHP, and MySQL technologies, they implement and realize the client-side-scripting framework to collect client paradata in a seamlessly manner. Then, the author exploited the framework by applying it to two online systems: E-Survey and E-Commerce web applications. With the resultant model, they can infer whether a student is mindful and conscious while answering the feedback questions. On the other hand, Carvalho et. al, have studied an elastic allocation and automatic migration scheme for virtual machines. They have presented an autonomic resource management system for cloud computing, called VOLTAIC. The proposal analyzes usage profiles of physical and virtual elements and defines heuristics based on differential utilization level that guarantee an enhanced allocation of virtual elements. Results obtained through the implementation of the system in a small-scale environment show that the system efficiently assigns virtual elements and ensures proper resource allocation to virtual elements. Results show improvements in up to 10% in the amount of offered cycles due to correct assignment of virtual elements.

The ubiquitous computing also called pervasive computing-regroups of mobile computing and the techniques of context-awareness are flexible, adaptable, and capable of acting autonomously on behalf of users. However, the pervasive computing introduces a variety of software, hardware and users engineering challenges. Therefore, a generic model for pervasive information system has been presented by Achor et. al. They also propose an instantiation process to validate this generic model. The generic model validation is realized by two ways; manually and automatically. The last way is obtained by the creation of automatic system of OWL instantiation. It was shown that the proposed model is able to define the meta-data ontology that conforms to the proposed UML class diagram.

Although flooding routing protocol is simple, it has many disadvantages summarized by the redundant broadcasts, contention and collision, which are referred to as the broadcast storm problem. Therefore a dynamic probabilistic flooding algorithm in dynamic source routing was presented by Bani Yassein et al. They extend the dynamic source routing protocol by dynamically determining the rebroadcast probability of a node based on the local knowledge of the neighbors. The proposed extension was able to reduce the rebroadcasting messages, increase the overall routing

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reliability and decrease the routing overhead. The simulations results show that the proposed protocol outperformed original protocol in terms of reducing average End-To-End delay, increased packet delivery ration and reducing routing overhead.

Then, Aljarrah et. al, have implemented an arabic optical character recognition system. The system takes a scanned image of an arabic text as an input and generates an editable text out of it. The system starts by segmenting the document which is presented as an image into lines, then each line is also segmented into separate words, after that each word is further segmented to sub-words. The minimum distance classifier is used in the classification stage. A recognition rate of 93.5% is achieved. Then, they improve the accuracy of the system by employing a lookup dictionary to correct some of the misclassified characters. This resulted in improving the accuracy to 96.1%.

Finally, as guest –co-editors of this SI, we would like to express our deepest thanks to the Editor-in-Chief, Professor Sabah Mohammed for hosting this Issue in the JETWI and for his continued support and helpful guidance throughout all the stages of preparing this SI. Our sincere thanks also go to the Editorial-office staff of the journal for their excellent job during the course of preparing this special issue. We also thank the authors for their contributions, including those whose papers were not included. We thank and greatly appreciate the thoughtful work of many reviewers who provided invaluable evaluations and recommendations.

Guest Editors

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Mohammad Al-Rousan is currently A full professor at the Department of Network Engineering and Security, Jordan University of Science and Technology (JUST). He was educated in KSA, Jordan and USA. He received his BSc in Computer Engineering from King Saud University, Saudi Arabia, in 1986. He received his M.S. in Electrical and Computer Engineering from University of Missouri-Columbia, MI, USA in 1992. In 1996, he was awarded the PhD in Electrical and Computer Engineering from Brigham Young University, UT, USA. He was then an assistant professor at JUST, Jordan. In 2002, he joint the Computer Engineering Department at American University of Sharjah, UAE. Since 2008, he has been the Dean of College of Computer and Information Technology at JUST. He is the Director of the Artificial Inelegant and Robotics Laboratory, and a co-founder for the Nano-bio laboratory, at JUST. His search interests include wireless networking, System protocols, intelligent systems, computer applications, and Nanotechnology, Internet computing. Dr. Al-Rousan served on organising and program committees for many prestigious international conferences. He is the recipient of several prestigious awards and recognitions. He co-chaired international conferences on Information and Communication Systems (ICICS09 and ICICS11).

Ahmed Y. Al-Dubai is currently a lecturer in the School of Computing at Edinburgh Napier University. He was educated in Yemen, Jordan and UK. He received his BSc and MSc in Computer Science from Mutah University and Al al-Bayt University, Jordan in 1996, 1999, respectively. In 2004, he was awarded the PhD in computing from the Department of Computing Science, University of Glasgow (Outstanding PhD studentship award). He was then a full time lecturer at Thames Valley University-London, 2004-2005 before joining Edinburgh Napier University. His research interests include communication algorithms, parallel & distributed computing and next generation wired and wireless networks. His research is funded by different sources, including EU, Universities UK and the Royal Society. He served on organising and program committees for many prestigious IEEE and ACM international conferences. He is the recipient of several prestigious awards and recognitions. He has been the Guest Co-Editor of 10 international journals. He chaired and co-chaired 12 IEEE/ACM international conferences/workshops. Dr Al-Dubai is Senior Member of the IEEE, and Member of the IEEE Computer Society and the ACM.

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