# Special Issue on Selected Extended Best Papers from ICETE-2011

# Guest Editorial

This special issue of the Journal of Networks includes extended versions of extended versions of selected best papers accepted and presented at the 8th International Joint Conference on e-Business and Telecommunications (ICETE 2011). Eight papers were selected based on their excellent review scores. Their authors were invited to submit extended versions, which have undergone a second review process to guarantee that all the papers included in this Special Issue have been rigorously peer-reviewed. The accepted papers cover areas like empirical evaluations, simulation modeling and theoretical studies addressing a variety of topics related to security in telecommunications, wireless networking, and localization.

The first paper "Simplified Scheduling for Underwater Acoustic Networks" is authored by W. Van Kleunen, N. Meratnia and P. J. M. Havinga. It proposes an interesting solution to the scheduling and routing issues in underwater acoustic networks, giving a simplified set of constrains. These constrains are applied to three new scheduling algorithms: centralized for maximum throughput, distributed for low computational costs and centralized for low-latency end-to-end communications. The evaluation by simulation explores extensively the benefits obtained when the new set of constrains is applied to the proposed algorithms.

The second paper, entitled "Power Management Mechanism Exploiting Network and Video Information over Wireless Links" authored by C. Bouras, S. Charalambides, K. Stamos, S. Stroumpis and G. Zaoudis, describes some cross-layer mechanisms to manage power consumption in wireless communications. The authors focus their analysis on video transmissions. The scenarios proposed are simulated using ns-2 simulator, obtaining relevant results referred to the video quality and the associated power consumption.

In the third paper, "QoS-Aware Multipath Communications over MANETs", by M. Obaidat, M. Ali, I. Shahwan, M. S. Obaidat, and S. Obeidat, the authors propose a QoS aware routing protocol based on multipath routing. They try to minimize the packet delay providing more than one path between source and destination, and choosing the best path based on the quality of the link. The new protocol is compared against another well-known single path routing protocol (AODV) by means of simulation over OPNET. The results show that the new routing protocol outperforms AODV in terms of end-to-end delay, but at the cost of a greater protocol overhead.

The fourth paper, "Fingerprint Indoor Position System Based On Bitcloud and Openmac", authored by J. A. Gómez, A. V. Medina, E. Dorronzoro, O. Rivera and M. Merino, uses fingerprints as an alternative approach to estimate location of mobile nodes in WSNs. The fingerprints are used in two algorithms, being the second one (centroid) the algorithm that offers more accuracy. The algorithms are tested in two real implementations (bitcloud and openmac) over a specific scenario. The results show that openmac can overtake the problems detected in bitcloud and improve the precision on localization.

The fifth paper is entitled "Localization Method For Low Power Wireless Sensor Networks", authored by D. F. Larios, J. Barbancho, F. J. Molina and C. León. This paper proposes a range-free localization algorithm that uses fuzzy logic to process RSSI and estimate the position of mobile devices. This method causes less localization errors than other well-known localization methods and, at the same time, it improves power consumption of the mobile nodes.

The sixth paper, "Development Tools For Context Aware And Secure Pervasive Computing in Embedded Systems (PECES) Middleware", authored by R. Zhao, K. Selvarajah and N. Speirs presents a set of tools to enable the communication among heterogeneous devices across multiple smart devices and platforms in a secure manner. PECES and its tools are especially useful for experienced developers of services and applications that desire a clean deployment of their applications regardless of the platform for which they are developing. PECES has been evaluated by means of heuristic techniques that conclude that the majority of interviewed people assert that PECES is useful, and easy to use.

The seventh paper "Performance of OpenDPI in Identifying Sampled Network Traffic", authored by J. Khalife, A. Hajjar and J. Diaz, studies the impact of sampling traffic on the performance of OpenDPI, by means of two different ways of gathering information: per-packet sampling and per-flow sampling, in order to determine the reduction of the input data and the accuracy of the classification. Results show that the per-flow packet is more convenient for sampling; showing very high accuracy rates.

The last paper entitled, "Anomaly Detection Using Metaheuristic Firefly Harmonic Clustering", authored by M. H. A. C. Adaniya, T. Abrão and M. Lemes Proença presents a clustering algorithm based on K-Harmonic means (KHM) and Firefly Algorithm (FA) for the detection of network volume anomalies due to device failing or misconfiguration. As a consequence of the application to the real data collected from a proxy server, and a further statistic analysis, the algorithm achieves about 80% of true positive recognitions and 20% of false positive recognitions, demonstrating the satisfactory behaviour of this algorithm.

The guest editors would like to thank all the authors and reviewers for their valuable contributions to this special issue. We also thank the editorial staff of Journal of Networking for their support. We hope that the papers selected in this special issue will become useful resources for researchers and practitioners in these areas.

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**Professor Mohammad S. Obaidat** (Fellow of IEEE and Fellow of SCS) is an internationally well-known academic/researcher/ scientist. He received his Ph.D. and M. S. degrees in Computer Engineering with a minor in Computer Science from The Ohio State University, Columbus, Ohio, USA. Dr. Obaidat is currently a full Professor of Computer Science at Monmouth University, NJ, USA. Among his previous positions are Chair of the Department of Computer Science and Director of the Graduate Program at Monmouth University and a faculty member at the City University of New York. He has received extensive research funding and has published over Ten (10) books and over Five Hundred and fifty (550) refereed technical articles in scholarly international journals and proceedings of international conferences, and currently working on three more books. Professor Obaidat has served as a consultant for several corporations and organizations worldwide. Mohammad is the Editor-in-Chief of the Wiley International Journal of Communication Systems, the FTRA Journal of Convergence and the KSIP Journal of Information Processing. He served as an Editor of IEEE Wireless Communications from 2007-2010. Between 1991-2006, he served as a Technical Editor and an Area Editor of Simulation: Transactions of the Society for Modeling and Simulations (SCS) International, TSCS. He also served on the Editorial Advisory Board of Simulation. He is now an editor of the Wiley Security and Communication Networks Journal, Journal of Networks, International Journal of Information Technology, Communications and Convergence, IJITCC, Inderscience. He served on the International Advisory Board of the International Journal of Wireless Networks and Broadband Technologies, IGI-global. Prod. Obaidat is an associate editor/ editorial board member of seven other refereed scholarly journals including two IEEE Transactions, Elsevier Computer Communications Journal, Kluwer Journal of Supercomputing, SCS Journal of Defense Modeling and Simulation, Elsevier Journal of Computers and EE, International Journal of Communication Networks and Distributed Systems, The Academy Journal of Communications, International Journal of BioSciences and Technology and International Journal of Information Technology. He has guest edited numerous special issues of scholarly journals such as IEEE Transactions on Systems, Man and Cybernetics, SMC, IEEE Wireless Communications, IEEE Systems Journal, SIMULATION: Transactions of SCS, Elsevier Computer Communications Journal, Journal of C & EE, Wiley Security and Communication Networks, Journal of Networks, and International Journal of Communication Systems, among others. Obaidat has served as the steering committee chair, advisory Committee Chair and program chair of numerous international conferences.

He is the founder of two well-known international conferences: The International Conference on Computer, Information and Telecommunication Systems (CITS) and the International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS). He is also the co-founder of the International Conference on Data Communication Networking, DCNET. Between 1994-1997, Obaidat has served as distinguished speaker/visitor of IEEE Computer Society. Since 1995 he has been serving as an ACM distinguished Lecturer. He is also an SCS distinguished Lecturer. Between 1996-1999, Dr. Obaidat served as an IEEE/ACM program evaluator of the Computing Sciences Accreditation Board/Commission, CSAB/CSAC. Obaidat is the founder and first Chairman of SCS Technical Chapter (Committee) on PECTS (Performance Evaluation of Computer and Telecommunication Systems). He has served as the Scientific Advisor for the World Bank/UN Digital Inclusion Workshop- The Role of Information and Communication Technology in Development. Between 1995-2002, he has served as a member of the board of directors of the Society for Computer Simulation International. Between 2002-2004, he has served as Vice President of Conferences of the Society for Modeling and Simulation International SCS. Between 2004-2006, Prof. Obaidat has served as Vice President of Membership of the Society for Modeling and Simulation International SCS. Between 2006-2009, he has served as the Senior Vice President of SCS. Between 2009-2011, he served as the President of SCS. One of his recent co-authored papers has received the best paper award in the IEEE AICCSA 2009 international conference. He also received the best paper award for one of his papers accepted in IEEE GLOBCOM 2009 conference. Prof. Obaidat has been awarded a Nokia Research Fellowship and the distinguished Fulbright Scholar Award. He received the SCS Outstanding Service Award for his excellent leadership, services and technical contributions. Dr. Obaidat received very recently the Society for Modeling and Simulation Intentional (SCS) prestigious McLeod Founder's Award in recognition of his outstanding technical and professional contributions to modeling and simulation. He received in Dec 2010, the IEEE ComSoc- GLOBECOM 2010 Outstanding Leadership Award for his outstanding leadership of Communication Software Services and Multimedia Applications Symposium, CSSMA 2010. He received very recently the Society for Modeling and Simulation International's (SCS) prestigious Presidential Service Award for his outstanding unique, long-term technical contributions and services to the profession and society.

He has been invited to lecture and give keynote speeches worldwide. His research interests are: wireless communications and networks, telecommunications and Networking systems, security of network, information and computer systems, security of e-based systems, performance evaluation of computer systems, algorithms and networks, green ICT, high performance and parallel computing/computers, applied neural networks and pattern recognition, adaptive learning and speech processing. During the

2004/2005, he was on sabbatical leave as Fulbright Distinguished Professor and Advisor to the President of Philadelphia University in Jordan, Dr. Adnan Badran. The latter became the Prime Minister of Jordan in April 2005 and served earlier as Deputy Director General of UNESCO. Prof. Obaidat is a Fellow of the Society for Modeling and Simulation International SCS, and a Fellow of the Institute of Electrical and Electronics Engineers (IEEE). For more info; se: http://bluehawk.monmouth.edu/mobaidat/.

**Dr. Daniel Cascado-Caballero** is assistant professor in the University of Seville. He received his degree in Computer Science in 1996 and his PhD. in 2003, both from the University of Seville. From 2009 until now, he has server as publication Chair in the following conferences: ACS/IEEE AICCSA2009, SPECTS 2009, SPECTS 2010. SPECTS 2011, SPECTS 2012, CITS 2012. His research field is focused in wireless communications, simulation, network traffic analysis, and e-health, where he has numerous papers published in referred international journals and conferences.

**Dr. José Luis (Sevi) Sevillano** received his degree in Physics (electronics) and his Ph.D. from the University of Seville (Spain) in 1989 and 1993 respectively. From 1989 to 1991 he was a researcher supported by the Spanish Science and Technology Commission (CICYT). After being Assistant Professor of Computer Architecture at the University of Seville, since 1996 he is Associate Professor at the same University. He has served as Vice Dean of the Computer Engineering School (2004-7) and as Director of Innovations for Teaching (2007-8) at the University of Seville. Currently, he is Coordinator of the Telefónica Chair on Intelligence in Networks, University of Seville, Spain.

Since 2007 Prof. Sevillano is Associate Editor of the International Journal of Communication Systems, published by John Wiley. He is also Associate Editor of Simulation (Sage). He also served as Vice-President for Membership of The Society for Modeling & Simulation International (SCS) (2009-2011). He has served on several international conferences: as General Chair (SPECTS-11, ICETE 2011), as Program Co-Chair (ACS/IEEE AICCSA 2009, DCNET 2010, SPECTS-2009, SPECTS-2010), as well as member of the TPC. He is also a member of the Steering Committee of the International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS). One of his co-authored papers received the Best Paper award of the 13th Communications & Networking Simulation Symposium (CNS 2010). He is author/co-author of more than 60 research reports and papers in refereed international journals and conferences, and has participated in more than 20 research projects and contracts.

**Joaquim B L Filipe** is currently a Coordinator Professor and Head of the Department of Systems and Informatics of the School of Technology of the Polytechnic Institute of Setúbal (EST-Setúbal). He got his M.Sc. in 1989 by the Technical University of Lisbon, an M.B.A., awarded in 1995 by the New University of Lisbon and a Ph.D. awarded by the School of Computing of the Staffordshire University, U.K, in 2000. His main areas of research involve Artificial Intelligence and Multi-Agent System theory and applications to different domains, with an emphasis on social issues in activity coordination, especially in organizational modeling and simulation, where he has been actively involved in several R&D projects, including national and international programs. He represented EST-Setúbal in several European projects. He has over 80 publications including papers in conferences and journals, edited books and conference proceedings. He started the ICEIS conference series, in 1999 and is conference chair since then. As President of INSTICC, the Institute for Systems and Technologies of Information, Control and Communication, he also launched several international conferences, including ICETE (the Int'l Conference on e-Business and Telecommunications). He participated in more than 40 conference and workshop program committees and he is in the editorial board of several international scientific journals.